South Carolina. State Research,
Planning and Development Board

Health Facilities Survey. 1947

Health Facilities Survey

STATE of SOUTH CAROLINA

1947

RESEARCH, PLANNING AND DEVELOPMENT BOARD

Health Facilities Survey

STATE of SOUTH CAROLINA

1947

RESEARCH, PLANNING AND DEVELOPMENT BOARD

April 11, 1947

Mr. R. M. Cooper, Director
Research, Planning & Development Board
Columbia, S. C.

Dear Mr. Cooper:

It is a pleasure to present herewith to you and members of the Research, Planning and Development Board a report of the survey of the health facilities in South Carolina.

The plan outlined for the integration of hospitals will afford communities a flexible service to meet their needs.

In establishing area or community hospitals, population alone was not relied upon in the final determination of the hospital needs, rather the economic ability to support the hospital was more seriously considered in the recommendations for beds in the different localities. This is thought to be sound and provides an equitable distribution of hospitals in South Carolina.

It is urged that an official agency be appointed promptly to carry on the program.

It has been a pleasure to work with you and members of the Board, and we are grateful for the help extended by all departments of your organization.

Sincerely yours

W. N. WALTERS, Director
Hospital Survey

Enclosure
WNW dh

LETTER OF TRANSMITTAL

To His Excellency Governor J. Strom Thurmond:

In compliance with an Act of the Legislature of 1946 the Research, Planning and Development Board respectfully submits its survey as ordered by the Legislature to:

(a) Make surveys of the location, size and character of all existing public and private (proprietary as well as non-profit) hospitals, health centers, and other related facilities in the State;

(b) Evaluate the sufficiency of such hospitals, health centers, and related facilities for furnishing adequate hospital, clinic and related services to all the people of the State; and

(c) Compile such data and conclusions, together with a statement of new or expanded facilities necessary, in conjunction with existing structures, to supply such services.

R. M. COOPER, Director
Research, Planning and Development Board

RESEARCH, PLANNING AND DEVELOPMENT BOARD

"Hospital Survey"

Columbia, South Carolina

BOARD

Tom B. Pearce, Chairman
John P. Cooper
A. Stanley Llewellyn
Homer M. Pace
Roger C. Peace
R. M. Cooper, Director

ADVISORY COUNCIL

Ben F. Wyman, M.D., Chairman
Geo. W. Holman, Secretary
F. Oliver Bates
Geo. A. Bunch, D.D.S.
Jack Parker, M.D.
Julian P. Price, M.D.
Mrs. H. O. Speed
Truman V. West
James G. Halford

W. N. Walters, Director of Survey
Chas. B. Fellers, Assistant and Field Worker
James M. Stepp, Consulting Economist

FOREWORD

Pursuant to an Act of the Legislature of 1946, the Research, Planning and Development Board of South Carolina presents herewith data concerning hospital and health centers of the State.

In order best to serve the citizens of South Carolina the plan we present is designed for a flexible service which should be effective and acceptable to those who need and use it. Adjustments should be made from time to time to meet the needs of any given area or the State as a whole.

Further analysis should be made of the data presented, and after careful study recommendations made as to changes which might be for the best interest of the State.

To the agencies responsible for promulgating hospital care it is thought that the recommendations and data in this report will serve as a guide and pattern for the most appropriate distribution of hospitals in the State. The concerted efforts of all interested forces in South Carolina should support this undertaking and lend their influence to effectuate an efficient and adequate system of hospital care for all our people.

R. M. COOPER, Director
Research, Planning & Development Board

AUTHORS' FOREWORD

The Hospital Survey staff is acutely aware of the fact that this is not a perfect report. It is our sincere hope that readers will attribute most of the deficiencies to the necessity for getting the report completed in time for the 1947 meeting of the South Carolina General Assembly in order that this group may study it and enact necessary legislation providing for the State's participation in the Federal Hospital Construction Program, as authorized by the 79th Congress of the United States. Time did not permit the testing of all conclusions as carefully as might be desired or presenting in minute detail the arguments for and against certain lines of action. It is felt, however, that the methods used are sound, that the conclusions reached are reasonable, and that the interests of South Carolina will be better served by not further delaying the publication of the report, and that the report in its present form is more advantageous to the interests of the State than to delay the report which would not be available until the 1948 Session of the General Assembly.

The staff is grateful for the help and support of the following organizations: The American Medical Association, the American College of Surgeons, the American Hospital Association, The South Carolina Hospital Association, the South Carolina Nurses Association, the Collector of Internal Revenue, the United States Chamber of Commerce, the United States Public Health Service, the South Carolina Department of Health, the Medical College of the State of South Carolina, the Arkansas State Board of Health, the Arkansas Hospital and Health Survey Advisory Committee, Clemson College, and the Michigan Hospital Survey. Valuable advice and assistance were also freely given by the hospital executives of South Carolina and by other individuals too numerous to mention by name.

W. N. WALTERS
C. B. FELLERS
J. M. STEPP

Columbia, S. C.
April 1, 1947

CONTENTS

PART I

PART II

TABLES

CHARTS AND MAPS

APPENDICES

APPENDIX A

APPENDIX B

Part I
Study of Existing Hospital Facilities

Chapter I
INTRODUCTION

Authorization For Study

In 1945 the 79th Congress of the United States enacted Public Law No. 725, entitled "The Hospital Survey and Construction Act." The purpose of this law was to encourage and assist the several States in making inventories of their existing hospitals, surveying the need for the construction of hospitals, and developing construction programs designed to furnish adequate hospital, clinical and similar services to all of the people. Pertinent provisions of this Act are contained in Appendix A. It may be summarized very briefly as follows:

The Act authorized the appropriation of $3,000,000 in order to assist the States to survey their needs for hospitals and related facilities and to develop programs for the construction of additional facilities. In order to qualify for a Federal grant for such survey and planning purposes, it was necessary that a State designate a single State agency to carry out the survey and planning functions.

The Act further authorizes the appropriation of $75,000,000 for each of the five fiscal years beginning July 1, 1946, in order to assist the States in the construction of public and non-profit hospitals, health centers, and other related facilities. In order to obtain such funds it is necessary that a State designate a single agency to administer or supervise the administration of the construction program. The various duties and responsibilities of these agencies are set forth in Appendix A.

In order for South Carolina to participate in the Federal aid provided for by Public Law No. 725 two things are necessary. (1) There must be established a State agency to carry out the survey and planning phase of the program. (2) There must be enacted proper legislation for setting up an agency to formulate and carry out actual construction of hospital facilities.

In order to meet the first requirement noted in the preceding paragraph, the South Carolina General Assembly on March 21, 1946, enacted legislation designating the Research, Planning and Development Board as the sole agency for South Carolina (a) to make surveys of the location, size and character of all existing public and private (proprietary as well as non-profit) hos-

pitals, health centers and other related facilities in the State; (b) to evaluate the sufficiency of such hospitals, health centers and related facilities for furnishing adequate hospital, clinic, and related services to all the people of the State, and (c) to compile such data and conclusions, together with a statement of new or expanded facilities necessary, in conjunction with existing structures, to supply such services.

The Research, Planning and Development Board organized the Hospital Survey Division to carry out this study and make recommendations. Further legislation is necessary in order that South Carolina may participate in the actual construction program.

Purpose of Study

The purposes of the study were as follows: (1) To survey present hospitals and health centers and get as much detailed information as is necessary for analyzing the adequacy of the facilities now in use; (2) to analyze the effects of population, economic, geographic and other factors upon the demand for hospital service; (3) to ascertain the hospital needs for South Carolina; and (4) to draft a long-term plan designed to provide an adequate system of coordinated hospital and health service facilities to serve every community in South Carolina.

Method of Study

Schedules prepared by the Commission on Hospital Care were used to take an inventory of existing facilities. These extensive schedules were distributed to the hospitals throughout the State. A short time thereafter four regional meetings of the hospital administrators and key personnel were held for the purpose of interpreting the questions in the schedule and explaining the importance of filling in the questionnaires accurately and completely. Field workers were employed and sent out over the State to collect the schedules.

Existing data on population, income, birth and death rates, travel distances, medical personnel, and related factors were analyzed and related to the supply of, and demand for, the services of hospitals, and there was drawn up a plan for the systematic development of hospitals throughout the State. This plan proposes the development of fifteen hospital service areas, with further divisions into hospital communities, distributed in such a manner as to provide an adequate service to meet the needs of all the people in South Carolina.

Chapter II

TYPES OF HOSPITALS AND THEIR FUNCTIONS

The purpose of the hospital is to care for the sick and injured, to educate physicians, nurses and other technical personnel, and to carry on an educational program for preventing disease and promoting health. The necessary equipment and facilities should be available for the advancement of research and medical science.

Hospitals may be classified according to ownership and control into two classes, (1) governmental and (2) non-governmental. Governmental hospitals include Federal, State, County and City hospitals. Non-governmental hospitals may be classified as either non-profit or proprietary institutions. Non-profit hospitals are the hospitals owned and controlled by churches, fraternal organizations and non-profit associations. Proprietary hospitals are organized for profit and are owned and controlled by corporations, individuals and partnerships.

Each of these groups may be sub-classified according to the type of service rendered to patients, and may be designated as general and allied special hospitals for the acutely ill and special hospitals for tuberculosis and nervous and mental patients.

Special Hospitals

Allied Special Hospitals

Allied special hospitals are so designated because they are allied to the general hospital in that the type of service these institutions offer is also provided by general hospitals. The difference is that the allied special hospital provides only part of the services that are provided in the general hospital. For example, a general hospital and an orthopedic (special) hospital are alike in that both provide facilities for treating diseases of and injuries to the bones. The difference lies in the fact that this is the only kind of service rendered by the orthopedic hospital, while the general hospital provides many other services.

Other Special Hospitals

There are two major types of special hospitals other than allied special hospitals. These two, mental hospital and tuberculosis hospitals, offer a type of care that is not usually found in

general hospitals. The length of stay of mental and tubercular patients is much longer than the average length of stay in general hospitals, the type of care needed is somewhat different, and these two types of special hospitals can be larger than general hospitals without sacrificing quality of service or operating efficiency.

Functions of the General Hospital

The general hospital should be considered an institution which is adequately equipped and efficiently staffed so that patients with ordinary illnesses may receive adequate attention. Even with this broad definition, special consideration of function must be given to the difference in the capacity for providing adequate service among large and small hospitals. The size of the hospital will determine the manner in which it is organized to provide service for specific types of illness.

Some of the larger institutions render a comprehensive service, but many of them and most of the smaller institutions still fail to provide various types of service and to admit certain types of patients. In order to establish a complete and well rounded program to meet the needs of the people, thought must be given to the manner in which general hospitals can and should expand their functions in the most effective and economical manner to meet that need.

The State and the communities have a definite responsibility in seeing that the necessary facilities are available as a means of keeping the people well or restoring lost health. This responsibility should extend to all classes of people, to the indigent, and to the person of moderate income who does not want to accept charity, but, who, if he were required to pay for all the services required for diagnosis, would probably be compelled to do without some of the services because of his inability to pay for them. The wealthy man is willing and able to pay for his needs and desires. So far as it is possible adequate hospital and health facilities should be made available by the community for all of its citizens.

The first consideration of the hospital is the patient, and to give to him the best possible care and service. It is necessary that the hospital have the technical equipment and the educational facilities for training physicians, nurses, and other per-

sonnel. It is not such a problem for the large hospital to have such a program, but for the small hospital it would be difficult. Therefore, the smaller hospitals not having the necessary educational facilities must depend upon, and have an arrangement with, the larger hospitals for consultation and advisory service. The services in hospitals should not be limited to the diagnosis and treatment of in-bed patients. There should be cooperation with the Department of Health in prevention of disease and the promotion of health. The Health Department is concerned with the health of the community, the hospital is concerned with the health of the individual patient. There is need for, and there should be, a closer cooperation between the Health Department and hospitals.

It is not practical or financially sound for the small hospital to attempt to carry on research. This service must be carried on in the large hospitals affiliated with a medical school, where the necessary facilities are available and the finances are ample. However, the medical staffs of these small hospitals can contribute to medical science by keeping accurate clinical records of their patients. This would enable any member of the staff to report his experience on any unusual case or cases coming under clinical observation, and to report the reaction to new drugs of patients suffering from specific diseases. If observations of this nature were carried on in all hospitals, it would be of great value to the teaching hospital in furthering its activities in research.

Contagious Diseases

The hospital survey in South Carolina revealed that no hospitals were set aside or designated as contagious disease hospitals, and it is not recommended that this type of hospital be built. The larger hospitals throughout the State are coping with this type of illness in a very satisfactory manner by having isolation quarters. Methods for the control of contagious diseases have improved, and there is less demand for such hospitals. However, the hospital of 50 beds or more should make provision for handling some isolation cases, thereby saving the patient from being treated at home or being transported a great distance to a medical center or to one of the larger hospitals which are equipped for this type of service. During epidemics wards or units may be set aside for the emergency, and when such an

emergency is over the beds may be reverted to normal use. This will cause the hospital to have fewer idle beds.

Tuberculosis

General hospitals as a rule refuse admission to patients afflicted with pulmonary tuberculosis and insist upon removal of the patient whenever the diagnostic study discloses the presence of the disease. It would be well for the larger hospitals to provide a few beds for this type of patient for further study and treatment. General hospitals could materially assist in the campaign for the further reduction or eradication of the disease by providing routine radiological examination of the chest of all patients upon admission.

Nervous and Mental Patients

Many general hospitals make no provision for psychiatric patients. Hospitals of 100 beds or over should provide some facilities for patients who might develop short episodes of mental disturbance. It is generally conceded that more can be done for the patient in the very early stages of mental illness than when the disease has progressed to an advanced state.

Chronic Disease Patients

These patients differ little from the patient afflicted with acute illness. The difference is in the amount of service they require, and in their average length of stay. A general hospital should make provisions to take care of a limited number of these patients, thereby rendering a more comprehensive service to its community. No hospitals in South Carolina have beds set aside for this type of service.

Special Activities of Hospitals

The general hospital has many roles in the community. It should be the focal point for all types of medical practice, thereby affording to the medical profession an opportunity to organize in such a way that the benefit of group action will work to the advantage of both the patient and doctor. This would tend to conserve personnel and expensive equipment. Some method can be worked out for the common use by all physicians of the

personnel and equipment of the community hospital, thus eliminating duplication and expense. If physicians, hospitals, and Health Departments integrate their facilities into a coordinated program, a much improved service to the public would be assured, and it might be at a lower cost.

Outpatient Service

The medical profession and the hospitals have a definite responsibility to a community in providing some medical care, regardless of the individual's ability to pay. The hospital not only must care for in-bed patients who are admitted for diagnosis and treatment, but it must also care for the large group of patients who are not confined to bed. The physicians with limited diagnostic equipment and facilities should refer patients to the hospital for special diagnostic services. These patients are called out-patients. A good outpatient department in the hospital is essential. Eighteen general hospitals out of sixty-one for the State have organized outpatient departments.

Medical Social Service in Hospitals

To diagnose a patient's condition properly, the physician should know his state of mind, his economic, domestic and working status, and religious and recreational life, all of which have a direct bearing on his physical and mental health. The medical social service department in the hospital provides this type of information, and it is the duty of this department to obtain and apply such understanding of the patient as will enable the hospital, physician and other agencies concerned to treat his illness more effectively. This department should be concerned with the condition and attitude of the patient before he enters the hospital, during his stay, and then after he leaves the hospital. A complete follow-up of long drawn out cases is a good example of medical social work. Medical social service departments have become highly organized and utilized in hospitals over the nation. Hospitals in South Carolina have lagged far behind in offering this service to the sick of the State. There is a definite need for medical social service in all general hospitals in South Carolina. Three hospitals out of sixty-one have this service available.

Dental Clinics

In recent years the importance of caring for the teeth has been stressed. Schools, clubs and other organizations have been an influence in organizing an increased number of dental clinics. However, South Carolina is wholly lacking in dental service to the indigent or near indigent. Out of sixty-one general hospitals in the State, only eight hospitals have dental clinics.

Pediatric Service

A segregated service is essential for the treatment and guidance of children. They are undergoing growth and other changes and they require special attention and special services. Nutrition and surroundings play an important part in their treatment. Too few hospitals provide for this service in their over-all planning. Only nineteen of South Carolina's general hospitals have facilities for pediatrics, and some of these are inadequate.

Physical Therapy

Every approved hospital should have an efficient physical therapy department. It is very effective in orthopedic work and should play a major part in the treatment of outpatients suffering from sore and stiffened muscles and tendons, and in the treatment of broken bones. South Carolina has eight hospitals with organized physical therapy departments. There is an urgent need for development of this service in the hospitals in the State.

Dietary Department of Hospitals

This is one of the most important departments in the treatment of disease. Food and diet are important in the prevention and care of disease. The patient must learn his diet in order to carry it out when he returns home. Therefore, a properly planned diet in the treatment of disease becomes especially important to the patient. This department must carry on an educational program for the benefit of the patients. This requires a properly trained dietitian who will be able to interpret and carry out the orders of the physician in the treatment of diseases requiring special diets. Sixteen general hospitals out of the sixty-one for the State have registered dietitians in charge of the dietary department. In view of the importance of the functions of this department, it is urged that hospitals improve their services by obtaining registered dietitians as rapidly as possible.

Chapter III

STANDARDS OF HOSPITAL SERVICE

Minimum Requirements

Good standards must be maintained in all hospitals to give an effective and acceptable service. The yardstick by which hospitals are judged is an approved program by The American College of Surgeons prescribing certain minimum requirements:

1. A modern physical plant, free from hazards and properly equipped for the comfort and scientific care of the patient.

2. Clearly stated constitutions, by-laws, rules, and regulations setting forth organization, duties, responsibilities, and relations.

3. A carefully selected governing board having complete and supreme authority for the management of the institution.

4. A competent, well trained executive officer or administrator with authority and responsibility to carry out the policies of the institution as authorized by the governing board.

5. An adequate number of efficient personnel, properly organized and under competent supervision.

6. An organized medical staff of ethical, competent physicians for the efficient care of the patients and for carrying out the professional policies of the hospital, subject to the approval of the governing board.

7. Adequate diagnostic and therapeutic facilities with efficient technical service under competent medical supervision.

8. Accurate and complete medical records, promptly written and filed in an accessible manner so as to be available for study, reference, follow-up, and research.

9. Group conferences of the administrative staff and of the medical staff to review regularly and thoroughly their respective activities in order to keep the service and the scientific work on the highest plane of efficiency.

10. A humanitarian attitude in which the best care of the patient is always the primary consideration.

Comparison of South Carolina Hospitals With Minimum Standards American College of Surgeons

There are seventy-eight general, allied, and special hospitals in South Carolina. Of this number only twenty-three, or twenty-nine per cent, of the hospitals were fully approved by the American College of Surgeons in 1946.

The physical plant of a hospital should be fire-proof, and every precaution should be taken for the safety of the patient. In planning a hospital, service for the patients, and convenience for the doctors and nurses should be paramount. Efficiency and economy in the operation and maintenance of the building, together with a flexible design for units of service, and for the grouping of rooms for special purposes, are important. Ample space should be set apart for administration, operating rooms, delivery rooms, dietary department, emergency room, record room, store rooms, laundry, nursery, engineering department, out-patient department and diagnostic facilities. Accomodations for patients should be ample, and composed of private rooms, semi-private rooms, and small wards. Rooms and halls should have an abundance of fresh air and sunshine. The personnel's time and energy should be considered in the construction of a hospital, as well as a pleasant and convenient working condition.

TABLE 1.—TYPE OF CONSTRUCTION OF HOSPITALS IN SOUTH CAROLINA, 1945

Exterior Type of Construction	No. of Hosp.	Interior Type of Construction	No. of Hosp.
Brick or Stone	49	Fire Resistive	27
Stucco, Veneer Brick or Stone	14	Non-Fire Resistive	51
Frame	15	Total	78
Total	78		

Table 1 discloses only 27 hospitals out of the 78 are fire resistive. Fifteen of the 78 hospitals are of frame construction. The majority of the hospitals in South Carolina do not meet the minimum requirements of the American College of Surgeons.

A HOSPITAL LICENSING LAW

A hospital licensing law is essential to the standardization of hospitals. Hospitals are public service institutions and as such should be of the highest type—life and death cannot be trifled with. Unsanitary conditions, inadequate equipment, insufficient qualified personnel for the safety of patients, and many other undesirable conditions are found in many hospitals. These conditions might influence the recovery of patients and jeopardize their health.

Over-crowded conditions should not be permitted by the hospital authorities, especially so in frame buildings which constitute a fire hazard. Some hospitals do not have the necessary equipment or diagnostic facilities for the adequate treatment of cases involved. Nor have they established good standards for personnel qualifications. These facts and others deserve consideration of licensing hospitals.

The need for such a law is evident and the passage of such a law would provide for the establishment and enforcement of basic standards for the care and treatment of patients in hospitals and similar institutions providing medical and nursing care. The law would provide also for the establishment and enforcement of basic standards for the construction, maintenance and operation of such hospitals.

All hospitals in the State should be licensed, where organized facilities are offered for the diagnosis and treatment of persons suffering from illness, injury or deformity, or where obstetrical or other care is rendered over a period of 24 hours.

All hospitals should be given a reasonable time to comply with the rules, regulations and minimum standards of the state law. After a reasonable time is given to hospitals and, if conditions still exist upon inspection which are detrimental to the health and safety of patients and personnel, such hospital should be refused a license to operate until the conditions are remedied.

Chapter IV

EXISTING HOSPITAL FACILITIES IN SOUTH CAROLINA

An endeavor was made to obtain a comprehensive inventory of the existing hospital facilities. For this purpose the "Schedule of Information" was used which had been prepared by the Commission on Hospital Care. This Schedule was designed to furnish all data essential to the analysis of a hospital and its capacity for service.

In order to obtain a complete inventory of existing hospital facilities in the State, information was secured from the seventy-eight institutions providing "in-bed" medical care to the general public. The following types of institutions were excluded:

1. All federal hospitals (Army, Navy, public health services, etc.)
2. Institutions providing service to special group of beneficiaries, such as college infirmaries, hospitals in prisons, institutions for the blind and deaf, etc.
3. All institutions which primarily provide custodial or domiciliary care.

All data submitted pertained to either the calendar year of 1945 or the hospital's fiscal year ending 1946.

The following tables and discussions present some of the "highlights" of the inventory at the State level. Much more information is available in the schedules which will be particularly useful in evaluating the existing service in the local hospitals, communities and districts of the State.

TABLE 2.—DISTRIBUTION OF HOSPITAL FACILITIES BY TYPE OF HOSPITAL SOUTH CAROLINA, 1945

Type of Hospital	NUMBER			PER CENT		
	Hospitals	Beds Normal	Beds Complement*	Hospitals	Beds Normal	Beds Complement*
General	61	4484	4646	78.2	46.0	39.9
Allied Special	8	339	339	10.3	3.5	2.9
Nervous & Mental	3	4028	5840	3.8	41.3	50.2
Tuberculosis	6	903	817	7.7	9.2	7.0
Total	78	9754	11,642	100.0	100.0	100.0

* The term "Complement" is used to denote the number of beds which were actually set up and in use at the time the survey was made. "Normal" is used to denote the number of beds for which the various hospitals were built or the number of beds which normally should be in use.

General Hospitals are the institutions that do not limit their admissions to certain special types of illness. More than three-fourths of the hospitals in South Carolina were general hospitals. They contained, however, only 39.9 per cent of the total beds.

Allied Special Hospitals are those which limit admissions for one reason or another to certain types of cases. They are allied to the general hospitals because the types of patients which are admitted to them are also usually admitted to general hospitals. Included in this group of eight hospitals were:

1 venereal disease hospital
3 orthopedic hospitals
1 eye, ear, nose and throat hospital
1 maternity home
1 urology hospital
1 alcoholic hospital

In this group there was 10.3 per cent of the hospitals containing 2.9 per cent of the total beds for the State.

Nervous and Mental Hospitals, as the name implies, provide facilities for the care and treatment of those patients afflicted with nervous and mental diseases. Only 3.8 per cent of South Carolina's hospitals were operated especially for nervous and mental patients. These few institutions, on the other hand, accounted for slightly more than one-half of the total hospital beds for the State.

Tuberculosis Hospitals make available facilities for the treatment of tubercular patients. Seven and seven-tenths per cent of the hospitals in the State were for tubercular patients. These institutions constituted 7 per cent of the total beds. There were no chronic and convalescent institutions in the State.

TABLE 3.—DISTRIBUTION OF GENERAL HOSPITAL FACILITIES BY OWNERSHIP, SOUTH CAROLINA, 1945

Type of Hospital	NUMBER			PER CENT		
	Hospitals	Beds Normal	Beds Complement	Hospitals	Beds Normal	Beds Complement
Non-Profit	32	2492	2585	52.5	55.6	55.6
Proprietary	14	288	288	22.9	6.4	6.2
Governmental	15	1704	1773	24.6	38.0	38.2
Total	61	4484	4646	100.0	100.0	100.0

The survey revealed 61 general hospitals in South Carolina with a normal bed capacity of 4484 beds. This constitutes a ratio

of 2.5 beds per 1000 population based upon estimated 1943 civilian population. The proprietary general hospitals represented 22.9 per cent of the total, but the number of beds which they contained is only 6.2 per cent of the total. More than fifty per cent of the general hospitals in the State were operated by nonprofit organizations.

TABLE 4.—DISTRIBUTION OF GENERAL HOSPITAL FACILITIES BY SIZE OF INSTITUTION, SOUTH CAROLINA, 1945

Size	NUMBER			PER CENT		
	Hospitals	Beds Normal	Beds Complement	Hospitals	Beds Normal	Beds Complement
Under 25 beds	15	221	221	24.6	4.9	4.8
25 to 49	15	513	526	24.6	11.6	11.3
50 to 99	20	1290	1352	32.8	28.7	29.1
100 to 249	7	944	975	11.5	21.1	21.0
250 to 499	4	1511	1572	6.5	33.7	33.8
Total	61	4484	4646	100.0	100.0	100.0

Fifteen, or 24.6 per cent, of the 61 general hospitals in South Carolina have less than 25 beds, which accounts for only 4.7 per cent of the total number of general hospital beds. Eleven of these small hospitals are proprietary in ownership. The four hospitals in the size group 250 to 499 beds accounted for only 6.5 per cent of the total hospitals, but they accounted for 33.8 per cent of the total number of general hospital beds.

TABLE 5.—NUMBER OF BEDS (COMPLEMENT*) IN GENERAL HOSPITALS BY OWNERSHIP AND SIZE, SOUTH CAROLINA, 1945

Type of Ownership	Total	Less than 25 beds	25-49	50-99	100-249	250-499	Average Size**
Non-Profit	2585	81	263	905	843	493	81
Church	603	..	92	165	346	..	75
Association	1982	81	171	740	497	493	83
Proprietary	288	140	25	123	..	..	21
Ind. or Part.	278	130	25	123	..	..	23
Corporation	10	10	..	..	..	..	5
Government	1773	..	238	324	132	1079	118
County	1220	..	212	258	..	750	111
City	553	..	26	66	132	329	138
Total	4646	221	526	1352	975	1572	76

* The term "Complement" is used to denote the number of beds which were actually set up and used at the time the survey was made.

** Number of beds divided by number of hospitals.

The average size of governmental hospitals tended to be much larger than any other group. The proprietary hospitals had the largest proportion of beds in the small hospitals (under 25 beds). More general hospital beds (33.8%) were in hospitals that range in size from 250 to 499 beds. Of the 1572 beds in this size group, 68.6 per cent or 1079, were in governmental hospitals.

TABLE 6.—SELECTED DATA ON THE OPERATION OF GENERAL HOSPITALS BY CONTROL, SOUTH CAROLINA, 1945

Control	Admissions		Average Daily Census		Births		Deaths	
	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent
Non-Profit	79,908	56.1	1738	55.6	12,251	59.3	2578	55.4
Proprietary	9,540	6.7	148	4.7	1,139	5.5	114	2.5
Governmental	53,061	37.2	1243	39.7	7,286	35.2	1961	42.1
Total	142,509	100.0	3129	100.0	20,676	100.0	4653	100.0

In 1945, 142,509 patients, or 8 per cent of the total population, were admitted to the general hospitals in South Carolina. On a given day in South Carolina about 3,129 persons were in general hospitals. In 1945, 20,676 births, or 40 per cent of the total births registered in the State, occurred in the general hospitals. Twenty-seven per cent of the total number of deaths in 1945 occurred in general hospitals.

TABLE 7.—SELECTED DATA ON THE OPERATIONS OF GENERAL HOSPITALS BY SIZE, SOUTH CAROLINA, 1945

Size (Beds)	Admissions		Average Daily Census		Births		Deaths	
	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent
Under 25	4,995	3.5	114	3.6	1012	4.9	116	2.5
25-49	17,152	12.0	281	9.0	2297	11.1	506	10.9
50-99	47,950	33.6	895	28.6	7126	34.5	1378	29.6
100-249	33,280	23.4	773	24.7	5238	25.3	1161	24.9
250-499	39,132	27.5	1066	34.1	5003	24.2	1492	32.1
Total	142,509	100.0	3129	100.0	20,676	100.0	4653	100.0

There was quite a variation in the distribution of beds (Table 4) in comparison with the percentage of admissions by hospitals of different sizes. Hospitals having under 25 beds and hospitals with more than 250 beds had a smaller percentage of admissions than their percentage of beds (Table 4). Although the large hospitals (250 to 499 beds) had 27.5 per cent of the total admissions, they reported 34.1 per cent of all patients in general hospitals on an average day. These figures indicate that the length of stay of their patients is longer.

Hospitals of 250 or more beds reported 32.1 per cent of the total deaths while the small hospitals (under 50 bed capacity) reported only 13.4 per cent. This would indicate that the more serious cases are treated in the larger hospitals and in many cases are probably referred from the smaller institutions. This is not true with regard to births. The smaller hospitals had a higher percentage of the total births than the percentage of deaths.

TABLE 8.—OCCUPANCY OF GENERAL HOSPITALS BY SIZE AND CONTROL, SOUTH CAROLINA, 1945

Size (Beds)	Per Cent* of Beds Occupied by Type of Control			
	All Types	Non-Profit	Proprietary	Governmental
Under 25	51	50	52	..
25 to 49	53	53	85	51
50 to 99	66	68	44	70
100 to 249	79	78	..	89
250 to 499	68	59	..	72
All Sizes	67	67	51	70

* Patient days divided by the number of beds (multiplied by 365).

Table 8 denotes the fact that the average utilization of an individual hospital (per cent of occupany) varies according to the size of the institution. The reason for the smaller percentage occupancy in hospitals having more than 250 beds is that several of the hospitals had closed some wings and floors in the hospitals because of a shortage of trained personnel, professional and technical. Proprietary hospitals do not appear to follow the observed tendency as do the non-profit and government institutions. Non-profit and governmental hospitals are used to a greater extent (higher average occupancy) than are proprietary institutions.

TABLE 9.—DEATHS IN GENERAL HOSPITALS BY CONTROL, SOUTH CAROLINA, 1945

Type of Control	Number of Admissions	DEATHS	
		Number	Rate Per 100 Admissions
Non-Profit	79,908	2578	3.2
Proprietary	9,540	114	1.2
Governmental	53,061	1961	3.7
Total	142,509	4653	3.3

There was a death rate of 3.3 per cent among the 142,509 patients admitted to South Carolina's general hospitals in 1945. The rate varied from 1.2 per cent in proprietary hospitals to 3.7 in governmental general hospitals. The governmental hospitals care for a higher percentage of the more serious illnesses, which accounts, at least in part, for their high mortality rate.

TABLE 10.—DEATH RATES IN HOSPITALS BY CONTROL, TYPE AND SIZE, SOUTH CAROLINA, 1945

Type & Size	Deaths Per 100 Admissions, by Control			
	Total	Non-Profit	Proprietary	Governmental
All Hospitals (Total)	3.6	3.2	1.1	4.6
General	3.3	3.2	1.2	3.7
Under 25 beds	2.3	5.7	1.1	..
25 to 49	3.0	3.1	0.3	3.8
50 to 99	2.9	2.8	2.1	3.2
100 to 249	3.5	3.2	..	4.8
250 to 499	3.8	4.2	..	3.7
Allied Special	0.07	0.2	0.1	0
Nervous & Mental	19.8	..	3.3	20.5
Tuberculosis	28.1	*	..	28.0

* Withheld to avoid disclosure of information about specific hospitals.

In 1945, 5,345 deaths occurred in South Carolina's hospitals. This represented 31.2 per cent of the total number of deaths registered in the State. Eighty-seven per cent of the hospital deaths occurred in general hospitals.

Generally speaking, the mortality rate in general hospitals increased as the size of the hospital increased. It is also interesting to note the relatively high mortality rate in nervous and mental and tuberculosis hospitals. In most instances the patient's stay is much longer and the illnesses treated in these hospitals are quite different from those treated in general hospitals.

TABLE 11.—PER DIEM COST IN HOSPITALS BY TYPE, SOUTH CAROLINA, 1945
(67 Hospitals Reported)

Type of Hospitals	Patient Days of Hospitals Reporting Expense	Total Expense	Per Diem Cost
General	1,100,755	$6,901,248.19	6.27
Allied Special	27,939	175,380.07	6.28
Nervous and Mental	2,101,492	2,181,062.13	1.04
Tuberculosis	252,563	726,725.00	2.88
State Total	3,482,749	9,257,690.39	2.66

There is a wide differential between the $1.04 cost per patient day of service in nervous and mental hospitals and the $6.27 in general hospitals. The general and allied special hospitals offer more services for the patient, and this explains in part the difference in the cost per patient by the type of hospital. The illnesses treated in nervous and mental and tuberculosis hospitals are such that do not require the comprehensive service that is given in the general and allied hospitals. Table 11 gives a quick comparison of cost per patient per day and at the same time makes available a comparison of total service rendered by various hospitals in South Carolina in 1945.

TABLE 12.—INCOME AND EXPENSES OF GENERAL HOSPITALS BY OWNERSHIP, SOUTH CAROLINA, 1945

Type of Ownership	INCOME		EXPENSES		Patient Days of Hospital Reporting
	Total	Per Patient Day	Total	Per Patient Day	
Non-Profit	$4,301,274.39	6.84	$3,872,517.64	6.16	628,674
Proprietary	133,509.45	7.53	123,623.57	6.72	18,399
Governmental	3,082,000.10	6.79	2,905,106.98	6.40	453,682
Total	$7,521,783.94	6.83	$6,901,248.19	6.27	1,100,755

The figures in this table represent 53 general hospitals which reported both income and expense. There were eight general hospitals that did not report income and expense. Of these eight hospitals six are proprietary in ownership; the other two are non-profit.

As an average, non-profit hospitals spent $6.16, proprietary hospitals $6.72, and governmental hospitals spent $6.40 a day

to care for an individual patient. The governmental hospitals made the least profit (income over expenses) from the individual patient. The average profit from the individual patient for all types of hospitals in the State was 56 cents per patient day of service.

TABLE 13.—INCOME AND EXPENSES OF GENERAL HOSPITALS BY SIZE, SOUTH CAROLINA, 1945*

Size Groups (Beds)	INCOME		EXPENSES		Patient Days of Hospitals Reporting
	Total	Per Patient Day	Total	Per Patient Day	
Under 25	$141,129.77	4.24	$134,278.95	4.04	33,274
25 to 49	591,426.67	6.62	540,906.07	6.06	89,303
50 to 99	2,085,685.20	6.79	1,946,123.52	6.34	306,949
100 to 249	1,937,116.26	6.86	1,689,809.59	5.99	282,146
250 to 499	2,766,426.04	7.11	2,590,130.06	6.66	389,083
State Total	$7,521,783.94	6.83	$6,901,248.19	6.27	1,100,755

* 53 Hospitals reporting; see footnote, Table 12.

Among hospitals of different sizes, there is a rather wide variation in cost of operation, as represented by expenses per patient per day. In the smaller institutions, there are more personnel without professional training employed, and there are fewer employees per patient. This would partially account for the lower cost in operation. The service in small hospitals is not as comprehensive as it is in the larger hospitals, thereby decreasing the cost of operation for the smaller hospitals.

TABLE 14.—FULL-TIME PAID PERSONNEL EMPLOYED IN HOSPITALS, BY TYPE, SOUTH CAROLINA, 1945

Type	TOTAL NUMBER					
	Personnel	Nurs. Personnel	Grad. Nurses	Student Nurses	Practical Nurses	Nurses' Aid & Attendanst
General	4637	2327	731	1122	170	304
Allied Special	121	65	21	0	18	26
Tuberculosis	362	108	63	0	9	36
Nervous & Mental	850	440	50	16	6	368
Total for State	5970	2940	865	1138	203	734
	NUMBER PER PATIENT*					
General	1.482	.744	.234	,359	.054	.097
Allied Special	1.017	.546	.176	0	.151	.218
Tuberculosis	.523	.156	.091	0	.013	.052
Nervous & Mental	.148	.076	.009	.003	.001	.064
Total for State	.616	.303	.089	.117	.021	.076

* Based on average daily census.

There were 5,970 full time paid employees working in South Carolina's hospitals in 1945. Nursing personnel constituted 49 per cent of the total number of employees. The general hospitals had the most personnel per patient (1.482) and the nervous and mental institutions the smallest number (0.148). The general

hospital, because of the varied and complex cases handled, and the technical equipment needed for the proper diagnosis, would of necessity require a greater number of personnel, including trained nurses, per patient, than would the nervous and mental or the tuberculosis hospitals.

TABLE 15.—FULL-TIME PERSONNEL EMPLOYED IN GENERAL HOSPITALS BY SIZE, SOUTH CAROLINA, 1945

Size	Personnel	Nurs. Personnel	Grad. Nurses	Student Nurses	Practical Nurses	Nurses' Aid & Attendants
	TOTAL NUMBER					
Under 25	114	65	28	0	20	17
25 to 49	370	181	93	0	51	37
50 to 99	1163	649	272	195	92	90
100 to 249	1119	591	125	402	7	57
250 to 499	1871	841	213	525	0	103
Total	4637	2327	731	1122	170	304
	NUMBER PER PATIENT*					
Under 25	1.00	.570	.246	0	.175	.149
25 to 49	1.317	.644	.331	0	.181	.132
50 to 99	1.299	.725	.304	.218	.103	.101
100 to 249	1.448	.765	.162	.520	.009	.074
250 to 499	1.755	.789	.200	.492	0	.097
Total	1.482	.744	.234	.359	.054	.097

* Based on average daily census.

Nursing personnel constituted 50 per cent of the 4637 full time employees in general hospitals. Table 15 shows that as the hospital increased in size there were more personnel per patient. This is understandable when one considers the hospital from a service standpoint; the larger the hospital, the more complex and complicated becomes the service. Another notable feature of Table 15 is the high ratio of nurses' aides and practical nurses in the small hospitals under 25 beds. This demonstrates clearly that from an economical standpoint the cost of the small hospital for service comparable to that of the larger hospital would be prohibitive.

TABLE 16.—BEDS (COMPLEMENT*) FOR NEGROES BY TYPE OF HOSPITAL, SOUTH CAROLINA, 1945

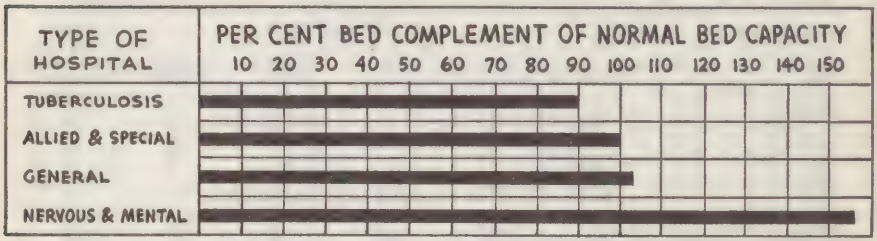
Type	Total Beds	Beds for Negroes	Per Cent Beds for Negroes
General	4646	1169	25
Allied & Special	339	6	2
Tuberculosis	817	354	43
Nervous and Mental	5840	2264	39
Total	11,642	3793	33

* The term "complement" is used to denote the number of beds which were actually set up and in use at the time the survey was made.

The survey revealed that 33 per cent of the total number of hospital beds in the State are negroes. In 1940, negroes con-

stituted 43 per cent of the total population for the State of South Carolina. It is reasonable to assume the need for negro hospital beds will increase as the purchasing power of the negro increases.

FIGURE I—BEDS IN USE IN RELATION TO NORMAL BED CAPACITY BY TYPE OF HOSPITAL, SOUTH CAROLINA, 1945



The nervous and mental institutions were more overcrowded (bed complement was 45 per cent above the normal bed capacity) than the general hospitals. The general hospitals were using 4 per cent more beds in 1945 than the hospitals were originally designed to accommodate. The allied and special hospitals had the same number of beds in use as their normal bed capacity. The tuberculosis hospitals' normal bed capacity exceeded the number of beds in use because in some tuberculosis hospitals separate units had not been equipped with beds, or units had been closed and reported as not being in existence.

Part II

An Integrated Hospital Plan For South Carolina

Chapter V

GENERAL HOSPITALS

Delineation of Hospital Areas

District Areas

A hospital has been appropriately defined as an agency in which the medical resources of the community are mobilized and implemented.

At the present there is no organized plan of hospitals in the State which would expedite the transfer of patients from clinics and small hospitals to larger hospitals for complete diagnoses. There is a definite need for an integration of hospitals in the State to provide the best medical care for the people.

In order to establish a coordinated hospital system throughout the State, fifteen district hospital service areas were delineated in the State (See Figure II). In delineating hospital service areas, population distribution, natural geographic boundaries, transportation and trade patterns were taken into consideration. Existing trading area boundaries were followed insofar as it was practicable. Political boundaries or county lines had to be followed in order to finance hospitals from county funds. It would have been very difficult to allocate funds to a hospital if the county was divided between two service areas.

Pickens County is an example of a county being in more than one trading area. It would have been impractical to divide Pickens County between two hospital service areas because of the complications of financing hospitals from county funds.

The hospital service area had to be large enough to support at least one general hospital which would have a capacity of one hundred or more beds and would be suitable for use in an area for which the district hospital could adequately provide special services which smaller community hospitals can not afford to maintain.

FIGURE II—DELINEATION OF HOSPITAL SERVICE AREAS AND CLASSIFICATION OF HOSPITAL COMMUNITIES, SOUTH CAROLINA

The Florence district hospital service area is composed of four counties. Although the Florence trading area is larger, it was felt that the hospital service area is as large as the district hospital can adequately provide special services for patients and other hospitals in the service area.

Hospital Communities

For purposes of this study a hospital community is an area which because of the size of population needs hospitals of 50 or more beds. As a general rule smaller hospitals are not recommended.

The fifteen district hospital service areas were divided into thirty-seven hospital communities (See Figure II). In delineat-

ing the hospital communities the county lines were followed again because of financing the hospitals from county funds. The hospital communities were determined on the basis of population, distances from other hospitals, highways and geographic or other natural barriers.

Classification of Hospital Communities

Under Public Law 725, hospital communities have been classified as base, intermediate, or rural areas (See Figure II). The definitions for the various classifications of areas as defined in Public Law 725 are given below.

Base Area

Shall be any area which is so designated by the State Agency and has the following characteristics: (1) Irrespective of the population of the area, it shall contain a teaching hospital of a medical school whose undergraduate medical program is approved by the American Medical Association's Council on Medical Education and Hospitals. This hospital shall be suitable for use as a base hospital in a coordinated hospital system within the State. (2) The area shall contain a total population of at least 100,000 and at least one general hospital which has a complement of 200 or more beds for general use. This hospital shall be registered with the American Medical Association and approved by the American College of Surgeons, approved residencies in two or more specialties, as defined by the American Medical Association, and approved internship shall be provided by this hospital. The hospital shall be suitable for use as a base hospital in a coordinated hospital system within the State.

Intermediate Area

Shall be any area so designated by the State Agency which: (1) Has a total population of at least 25,000 and (2) contains or will contain on completion of the hospital construction program under the State plan, at least one general hospital which has a complement of 100 or more beds and which would be suitable for use as a district hospital in a coordinated hospital system within the State.

Rural Area

Shall be any area so designated by the State Agency which constitutes a unit, no part of which has been included in a base or intermediate area. The Surgeon General, with the approval of the Federal Hospital Council, and the administrator prescribe the general method or methods by which such beds shall be distributed among base, intermediate and rural areas: Provided, however, that the total of such beds for any State shall not exceed four and one-half per 1000 population, except states having less than twelve and more than six persons per square mile. South Carolina has more than twelve persons per square mile. The illustration below gives the distribution of beds in the three areas.

TABLE 17.—BED RATIO ALLOWED BY PUBLIC LAW 725

Number of People per Square Mile	Ratio of State	Beds per 100 Population		
		Base Area	Intermediate Area	Rural Area
12 and Over	4.5	4.5	4.0	2.5

For example, rural areas having a population of 20,000 (2.5 x 20,000) will have 50 beds for the area.

Intermediate areas, having a population of 25,000 (4 x 25,000) will have 100 beds for the area.

The examples above disclose the beds the Federal Government will help finance, and does not prohibit any area from exceeding the ratio for the area providing the justification for the excess meets the approval of the State Agency and the Surgeon General.

Method of Estimating General Hospital Requirements

Purpose and Limitations

Since additions to hospitals cannot conveniently be made year by year as the population grows and as the demand for hospitalization increases, it is desirable that needs be anticipated before they arise and provision be made to meet them. In this study, therefore, an attempt has been made to arrive at a reasonably sound estimate of what the population of South Carolina may be expected to be ten years from the time of this report and the extent to which this population will wish to use hospital fa-

cilities. The reason for using a ten year period is that there is much more likelihood of encountering significant unforeseeable changes in the general economic situation after that time than there is during that time. No responsible person is willing to make a specific estimate of exactly how long the United States may be expected to enjoy postwar prosperity, but it is generally believed that, except for a possible temporary recession, business conditions and employment should be good for from five to ten years. What happens after that will depend in a large measure upon what happens between now and then; hence the writers of this report feel unwilling to attempt to look more than ten years ahead.

Special attention is directed to the fact that all estimates looking ten years into the future are subject to a very high degree of error. In the making of any estimate, certain assumptions must be made, and it would be amazing indeed if the course of events should conform in every detail with these assumptions. Nevertheless, both business men and public officials very often find it necessary to take action and make investments in the expectation of future events. Risk is part of the price of progress, and the American people have always been willing to risk making mistakes in their efforts to improve their material well-being. In this connection, of course, sound business and public administration require that every care be taken in using facts rather than hopes in making estimates of future developments, and that plans based upon these estimates be conservative enough to leave a margin of safety in case the estimates were too optimistic. In this report every attempt is made to meet both of these requirements.

Since general hospitals draw practically all of their patients from areas in the immediate vicinity of the hospital facilities, it has been necessary to try to estimate the population and the rate of hospital utilization in 1957 for various sections of the State. A little reflection makes it obvious that the smaller the area under consideration the less reliance can be placed upon the continued usefulness of such estimates. For example, the erection and operation of a new industrial plant employing 5,000 people would have very little effect upon the situation in the State as a whole and would not affect by more than two or three per cent State estimates which had failed to foresee that much industrial growth. But for relatively small two-county or three-

county area in the immediate vicinity of the new plant, particularly if they were to a large extent rural counties, the situation with respect to population, occupations, and income would be so greatly changed that past estimates would have to be revised entirely.

In view of the above comments, the question may arise as to why such small-area estimates were made at all. The answer lies in the fact that the alternative is even less acceptable. The alternative is to assume that each county will have in 1957 the same proportion of the state's total population that it had in 1940 or 1943 (the latest years for which county population figures are available), which involves the assumption that the rate of population growth between 1940 and 1957 will be exactly the same for all counties in the State. In view of the fact that some counties have been losing population ever since 1910 while the population of certain other counties has almost doubled, such an assumption would be so erroneous as to be ridiculous. It is necessary, therefore, to make small-area estimates in order that the soundest possible State-wide hospital program may be planned. However, local people and the administrators of such a program should be constantly alert for new development which make it necessary to revise the estimates and the programs for particular counties or hospital communities.

Population Estimates

The State as a Whole—It was assumed that South Carolina will experience the same rate of total population increase between 1940 and 1960 as it experienced between 1920 and 1940. The year 1930 was ignored for this purpose because the severe economic depression which prevailed at that time discouraged normal movements of population from one place to another and the normal movement of labor from agriculture to commerce and industry. It is felt, therefore, that figures for 1930 are of dubious value for estimating economic and social trends in South Carolina during periods of reasonable economic prosperity. Since the population of South Carolina increased 12.8 per cent between 1920 and 1940, it was assumed that the State's population in 1957 will be 10.88 per cent above the 1940 figure. (If the total increase in 20 years is 12.8 per cent, the annual increase will be an average of 0.64 per cent, and the increase for 17

years will be 10.88 per cent). The validity of using this rate of population increase is strengthened by the fact that the civilian population of South Carolina on November 1, 1943 (as shown by ration books issued) plus the estimated number of South Carolinians in all branches of the Armed Services, are almost exactly equal to the population estimate for that year arrived at by the above method. It is felt, therefore, that the figure of 2,106,500 constitutes a fair and reasonable estimate of the total population of South Carolina for the year 1957.

Hospital Service Areas and Counties — The same general method was used for estimating the 1957 population of the various hospital service areas as was used for the State as a whole. However, it was necessary to take account of the fact that the war, while apparently having very little influence upon the trend for the State, had a very large influence in various hospital service areas, and that the nature of this influence varied from area to area. For the purpose of making first (or crude) estimates, it was assumed that the population trends that were apparent between 1940 and 1944 would carry on at *half* strength (rather than full strength) during the postwar period. In view of the limitations upon time available for completing the report, the following short cut method was used: To the November 1943 civilian population figure for each hospital service area there was added the estimated number of people from that area in the Armed Services. The sum of these figures was then considered as the total 1944 population of the hospital service area. Next it was assumed that half of any population change between 1940 and 1944 would have occurred by 1942, and the estimated population in 1942 was calculated accordingly. This figure was plotted on a chart along with the area's population figures for 1920, 1930 and 1940, and a trend line was projected from the 1920 figure through the 1942 figure on up to 1957, thereby giving the area's population estimate for 1957.

A careful analysis of each hospital service area indicated that in practically all cases the method described above was satisfactory. There was, however, one exception. In Hospital Service Area Number 2 it was noted that from 1920 to 1930 there was a large loss of population, whereas from 1930 to 1940, and also from 1940 to 1944, there was a gain in population. In this case the population estimate for 1957 was considered to lie half-way

between the figure determined by the trend since 1920 and the figure determined by the trend since 1930.

The final step was to refine the "crude" figures arrived at by the above method. This simply involved adding together the separate service area estimates, comparing the total with the over-all State estimate that had previously been calculated, and making a uniform revision in the hospital area estimates in order that the sum of the revised figures would be equal to the over-all State estimate. The correction factor was plus 0.987 per cent, and the "crude" service area estimates were raised accordingly. This, incidentally, accounts for the fact that the hospital service area population estimates for 1957 are not rounded off to the nearest hundred for the less populous areas and to the nearest thousand for the more populous areas.

In view of the fact that the projecting of trends and the making of estimates grows progressively more difficult as the area involved becomes smaller or the total population becomes less, no attempt was made to make a separate analysis of counties. Rather, it was assumed that in 1957 each county will have the same proportion of its hospital service area's total population as it had in November 1943. This will undoubtedly turn out to be an erroneous assumption with respect to certain counties, but as a general proposition there is considerable justification for it. Based upon past experience, one would expect that during the next few years the more urbanized counties in a particular section of the State would have a greater gain or a smaller loss in population than the more strictly rural counties in the same area. However, during the war there was a very great loss of population in the rural areas of South Carolina. This loss was so great that in many parts of the State there was a farm labor shortage which cannot be expected to be completely alleviated by the growth of farm mechanization during the next few years. Therefore, it is to be expected that many rural as well as urban areas will have population increases between 1944 and 1957, and that the usual disparity between population trends in rural and urban counties will be diminished. The results of these calculations are presented in the last column of Appendix Table VI.

The Demand for the Services of General Hospitals

Factors to be Considered—There are three important factors which influence the amount of hospital service, and therefore

the amount of hospital facilities, which a population of a given size will demand. The word "demand" is used here in the economic sense of involving both willingness and ability to buy. It is not to be confused with "need." People who are hungry and destitute may have a most urgent need for food and clothing, but they constitute no market for a self-sustaining business enterprise. Investments for the purpose of meeting such needs may be self-liquidating in the very long run through improved health and productivity. That, however, is an aspect of government policy which is not covered in the program with which this report is concerned. The hospital facilities recommended in this report are expected to be supported in a relatively short time by patients' fees plus whatever public support is now customary.

Assuming reasonable efficiency of operation and fees based upon cost of service, the amount of services in general hospitals demanded by a population of a given size will depend upon (1) the birth rate, (2) the amount of sickness which requires hospitalization, and (3) the extent to which people can afford to go to hospitals to have their babies and receive care while they are sick. It is apparent, therefore, that population alone is a very poor criterion of the potential demand for hospital services, and that the use of population data alone is justifiable only if it is not possible to give consideration to the effects of the above mentioned factors.[1] In this study an effort was made to apply these factors to the population estimates for each hospital service area in order that final recommendations for the construction of additional facilities might have a sound relationship to the vital statistics and economic conditions of the area. Since the county is the most predominant political subdivision of South Carolina, and since much economic data are reported on a county basis, an effort has been made to use the county as the basic unit for estimating the demand for services in general hospitals.

Birth Rates—An examination of the annual reports of the South Carolina Bureau of Vital Statistics shows there was a gradual decline in birth rates until the year 1938-39. (The reports of the Bureau of Vital Statistics are on a fiscal year basis.) In that year and also in the preceding one, the reported birth rate

[1] For a more detailed discussion of this subject, see *Hospital Resources and Needs*, Report of the Michigan Hospital Survey, The W. K. Kellogg Foundation, Battle Creek, Michigan, 1946, Chapter V.

for South Carolina was 21.5 births per 1000 population. After that, however, the rate rose until it reached 26.2 births per 1000 population in 1944-45.[2] There is little reason to believe that the high wartime birth rate will continue very far into the postwar period; rather, the chances are that the rate will fall about as quickly as it rose, and that birth rates in different parts of the State in 1957 will correspond more closely with those prevailing before the war than those prevailing in the 1940's. It was decided, therefore, to apply 1938-39 birth rates to 1957 population estimates in order to estimate the number of births that may be expected to occur in South Carolina in the latter year.

An examination of the annual reports of the Bureau of Vital Statistics also reveals that the birth rate is not the same throughout all parts of South Carolina; hence it would be desirable, if possible, to obtain and use the actual rate for each county. Unfortunately, however, vital statistics are reported in such a way that it is impossible to ascertain the actual birth rate (and death rate) for a particular county. This is because the births and deaths that occur in a hospital are assigned to the county in which the hospital is located rather than to the county in which the patient resides. If the reported birth rate in a county is low because many of that county's babies are born in a neighboring county's hospital, this reported birth rate cannot be used as a basis for estimating the county's hospital requirements for obstetrical purposes.

For the above reasons, no attempt was made to calculate birth (or death) rates for units as small as a county; rather, the 1938-39 birth rate for each hospital service area was calculated, and this rate was applied to the estimated 1957 population of each county in the service area. In one case it was found necessary to combine two hospital service areas for the purpose of calculating birth (and death) rates in order to arrive at reasonable conclusions. These areas were Areas 8 and 10. The results of these calculations are presented in Table 18.

Sickness Requiring Hospitalization—Everyone will no doubt agree that the amount of sickness requiring hospitalization is a major factor in determining the amount and kind of hospital facilities needed to meet the requirements of any population group. Any attempt, however, to attack this problem directly

[2] South Carolina State Board of Health, Sixty-Sixth Annual Report, p. 221.

runs into the inexorable fact that the necessary statistics are not available, and that surveys designed to obtain such data would be quite expensive. It becomes necessary, therefore, to seek an indirect method of approach which will yield usable results. One such method is to use the number of deaths as an index of the amount of illness that may be expected to require hospitalization. It is obvious, of course, that a large proportion of the deaths can not under any circumstances be expected to occur in general hospitals, and it is also obvious that the number of deaths in such hospitals is a very low percentage of the total number of admissions. These facts are not sufficient, however, to weaken to any considerable extent the effectiveness of using the number of deaths as a tool for estimating hospital requirements.

In the first place the death rate reflects both the age distribution and the general level of health of the population. Secondly, and perhaps more important to the problem at hand, there is throughout the entire United States a fairly uniform and stable relationship between the number of deaths in hospitals and the total number of days of hospital service provided.[3] For example, in 1943, the citizens of the State of New York received over 1400 days of hospitalization per 1000 population, whereas the citizens of South Carolina received only slightly over 600 days of hospitalization per 1000 population. But even with this large difference in the amount of hospitalization per 1000 people, the amount of hospitalization per hospital death was almost exactly the same in South Carolina as in New York, and there was not a great deal of variation among the other 46 States. This indicates that within rather wide limits an increase in the amount of hospital care will be reflected in an almost proportionate increase in the number of deaths occurring in hospitals. It also indicates that if an estimate can be made of the number of deaths that will occur in hospitals during any given period of time, there can be calculated a reliable estimate of the number of days of hospital care that will be required during that same period of time.

Before such a relatively simple calculation can be made, however, it is necessary to do two things. First, the total number of expected deaths in each county or hospital community must be estimated, and secondly, a conclusion must be reached regard-

[3] See *Hospital Resources and Needs, op. cit.*, pp. 101-103, and especially the chart on p. 102.

ing what proportion of that number may reasonably be expected to occur in hospitals. The following paragraphs explain how such estimates were made.

Total Number of Deaths—The same general method described for births was used for calculating the expected total number of deaths in 1957 for the various counties of South Carolina. In this case, however, the death rates prevailing in the year 1943-44 were used. The major reason why this year was chosen was the fact that the latest county population data available was for November 1, 1943 (about the mid-point of that fiscal year), and it was possible, therefore, to make certain desirable adjustments in the rates reported by the Bureau of Vital Statistics, which were based upon the 1942 civilian population of the State. The result of this adjustment was to raise the death rate of South Carolina from 9.3 to 10.3 per 1000 population. There is, however, another justification for assuming that the death rate in 1957 may be approximately equal to that prevailing among the civilian population in 1943-44. The return of military personnel to civilian life should have a tendency to lower the postwar death rate because of the fact that such people may be presumed to be healthier than the average person. On the other hand, it is expected that older age groups will constitute an increasing proportion of the total population in the future, and that this development will have a tendency to raise the death rate. These two factors will have a tendency to neutralize each other insofar as net changes in the 1943-44 civilian death rate are concerned.

Except for Hospital Service Areas 8 and 10, as noted in the section on "births," death rates in 1943-44 were calculated for each Hospital Service Area, and those rates were applied to the estimated 1957 population of each county in the Area. This gave an estimated total number of deaths in 1957 for each county. Since births and deaths are to be used separately in calculating hospital requirements, there was subtracted from each county's estimated total number of deaths the expected number of maternal deaths in 1957. For this purpose it was assumed that in 1957 there will be 3.0 maternal deaths per 1000 births in South Carolina. Also, since the maternal death rate will vary greatly from year to year in a single county (most counties will have under 1000 births), it was assumed that the average annual rate will be uniform throughout the State. In 1943-44 there were 4.1 maternal deaths per 1000 births, and in 1944-45 the rate was 3.7

per 1000. It appears reasonable to conclude that more widespread hospital care will reduce the maternal death rate considerably by 1957, and for the sake of convenience the figure of 3.0 per 1000 births was used. The results of these calculations are presented in Table 18, which shows for each county the 1957 estimates of total deaths and also non-maternal deaths.

Number of Births and Deaths Expected to be Hospitalized—As has already been indicated, data on the expected number of births and the expected number of non-maternal deaths are not a sufficient basis for estimating the requirements for facilities in general hospitals. It is also necessary to have data on the number of births and non-maternal deaths which may be expected to occur in general hospitals. Furthermore, it is necessary to break these data down by hospital communities—the willingness of the people of Charleston to use hospital facilities will have virtually no effect upon the demand for the services of general hospitals in Greenville.

It would be extremely difficult to forecast the effects of a hospital building program and a health education program upon the extent to which births and deaths will be hospitalized in South Carolina in 1957. Instead of attempting this, an effort was made to establish reasonable goals which a vigorous education program and an increased availability of hospital facilities at convenient locations might allow the State to reach by 1957. As a point of departure in making separate county estimates, it was assumed that for the State as a whole 60 per cent of the births and 35 per cent of the non-maternal deaths may be expected to occur in general hospitals in 1957. The comparable figures for 1945 are 40 per cent of the births and 27 per cent of the deaths. It is recognized that these "goals" for 1957 are perhaps to some extent optimistic, but it is felt that in something so important as a health improvement program a certain amount of ambition and optimism are justified. It is not felt, however, that these goals are unreasonable. For example, 88.2 per cent of the births and 37.8 per cent of the deaths in the State of Michigan in 1944 occurred in general hospitals,[4] and the figures for certain other States were higher.

[4] *Ibid,* p. 137.

TABLE 18.—ESTIMATES OF POPULATION, BIRTHS, DEATHS AND THE NUMBER OF BIRTHS AND DEATHS TO BE HOSPITALIZED, SOUTH CAROLINA, 1957, BY COUNTIES AND HOSPITAL SERVICE AREAS

Area No.	Counties by Hospital Service Area	Population 1957	Births 1957	Total Deaths 1957	Non-Maternal Deaths 1957	1945 Per Capita Buying Power Per Cent of State Average	Births to be Hospitalized 1957 Per Cent	Births to be Hospitalized 1957 Number	Deaths to be Hospitalized 1957 Per Cent	Deaths to be Hospitalized 1957 Number
		A	B	C	D	E	F	G	H	I
1	Charleston	179,976	4,260	2,004	1,991	120.70	72.42	3,085	42.25	841
	Berkeley	27,251	645	303	301	43.14	25.88	167	15.10	45
	Dorchester	23,025	545	256	254	63.28	37.97	207	22.15	56
	Area Total	230,252	5,450	2,563	2,546	105.79	....	3,459	....	942
2	Colleton	27,041	587	279	277	68.31	40.99	241	23.91	66
	Hampton	17,189	373	178	177	72.29	43.37	162	25.30	45
	Jasper	9,524	206	98	97	49.20	29.52	61	17.22	17
	Beaufort	24,309	528	251	249	70.76	42.46	224	24.77	62
	Area Total	78,063	1,694	806	800	67.61	....	688	....	190
3	Williamsburg	30,543	833	278	276	58.22	34.93	291	20.38	56
	Georgetown	40,653	1,109	371	368	87.14	52.28	580	30.50	112
	Area Total	71,196	1,942	649	644	70.62	....	871	....	168
4	Florence	84,309	2,000	952	946	118.47	71.08	1,422	41.46	392
	Dillon	34,349	815	388	386	72.94	43.76	357	25.53	99
	Marion	35,760	848	404	401	87.40	52.44	445	30.59	123
	Horry	62,706	1,487	708	704	85.64	51.38	764	29.97	211
	Area Total	217,124	5,150	2,452	2,437	96.67	....	2,988	....	825

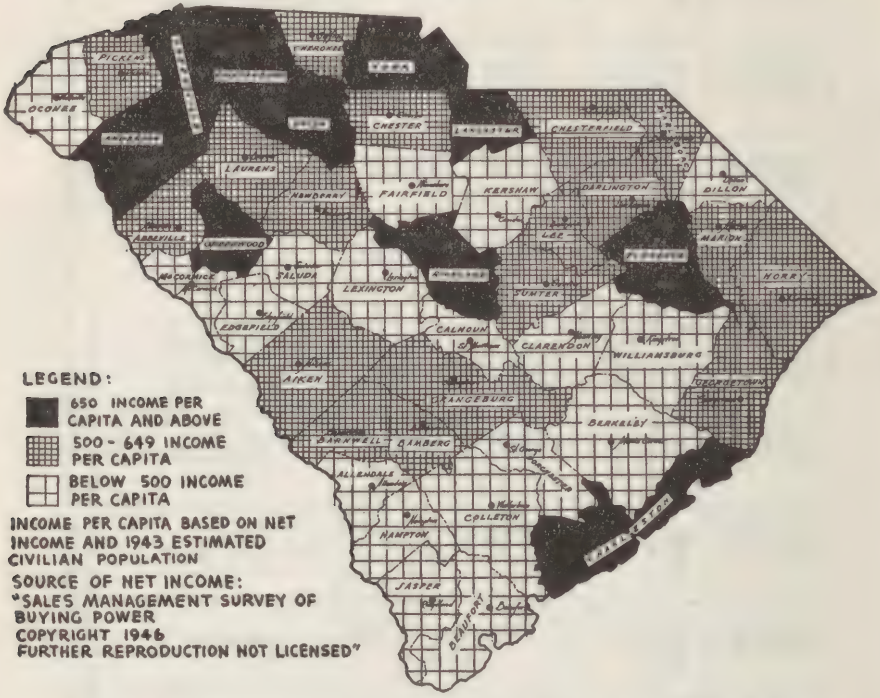
5	Bamberg	16,080	404	162	161	91.93	55.16	223	32.18	52
	Orangeburg	60,568	1,521	610	605	82.99	49.79	757	29.05	176
	Calhoun	14,002	352	141	140	75.45	45.27	159	26.41	37
	Barnwell	16,591	417	167	168	94.53	56.72	237	33.09	56
	Allendale	11,520	289	116	115	68.54	41.12	119	23.99	28
	Area Total	118,761	2,983	1,196	1,189	83.52	....	1,495	....	349
6	Sumter	55,457	1,197	593	589	91.47	54.88	657	32.01	189
	Lee	20,745	448	222	221	81.44	48.86	219	28.50	63
	Clarendon	29,531	638	316	314	60.36	36.22	231	21.13	66
	Area Total	105,733	2,283	1,131	1,124	80.82	....	1,107	....	318
7	Aiken	49,962	942	484	481	84.15	50.49	476	29.45	142
	Edgefield	16,689	315	162	161	72.70	43.62	137	25.45	41
	Area Total	66,651	1,257	646	642	81.27	....	613	....	183
8	Richland	137,275	2,605	1,698	1,690	124.29	74.57	1,943	43.50	735
	Lexington	41,934	796	519	517	69.33	41.60	331	24.27	125
	Fairfield	24,116	458	298	297	71.55	42.93	201	25.04	74
	Kershaw	40,763	774	504	502	63.52	38.11	295	22.23	112
	Area Total	244,088	4,633	3,019	3,006	99.48	....	2,770	....	1,046
9	Darlington	49,142	1,145	447	444	91.34	54.80	627	31.97	142
	Marlboro	34,128	795	310	308	87.13	52.28	416	30.50	94
	Chesterfield	35,891	836	326	323	79.91	47.95	401	27.97	90
	Area Total	119,161	2,776	1,083	1,075	86.68	....	1,444	....	326
10	Newberry	29,724	564	368	366	90.88	54.53	308	31.81	116
	Saluda	14,104	268	174	173	68.19	40.91	110	23.87	41
	Area Total	43,828	832	542	539	83.60	....	418	....	157

TABLE 18.—ESTIMATES OF POPULATION, BIRTHS, DEATHS AND THE NUMBER OF BIRTHS AND DEATHS TO BE HOSPITALIZED, SOUTH CAROLINA, 1957, BY COUNTIES AND HOSPITAL SERVICE AREAS—Continued

Area No.	Counties by Hospital Service Area	Population 1957	Births 1957	Total Deaths 1957	Non-Maternal Deaths 1957	1945 Per Capita Buying Power Per Cent of State Average	Births to be Hospitalized 1957 Per Cent	Births to be Hospitalized 1957 Number	Deaths to be Hospitalized 1957 Per Cent	Deaths to be Hospitalized 1957 Number
		A	B	C	D	E	F	G	H	I
11	York	66,113	1,393	625	621	110.03	66.02	920	38.51	239
	Chester	32,586	687	308	306	94.56	56.74	390	33.10	101
	Lancaster	26,728	563	253	251	102.45	61.47	346	35.86	90
	Area Total	125,427	2,643	1,186	1,178	104.39	....	1,656	....	430
12	Greenwood	38,398	733	399	397	131.08	78.65	577	45.88	182
	Abbeville	19,342	365	198	197	77.11	46.27	169	26.99	53
	McCormick	8,411	159	86	86	58.87	35.32	56	20.60	18
	Area Total	66,651	1,257	683	680	106.31	....	802	....	243
13	Anderson	95,390	1,873	789	783	105.55	63.33	1,186	36.94	289
	Oconee	42,223	829	349	347	72.69	43.61	362	25.44	88
	Pickens	38,610	758	319	317	80.32	48.19	365	28.11	89
	Area Total	176,223	3,460	1,457	1.447	92.31	....	1,913	....	466
14	Greenville	179,635	3,102	1,724	1,715	147.18	88.31	2,739	54.51	883
	Laurens	46,577	804	447	445	95.82	57.49	462	33.54	149
	Area Total	226,212	3,906	2,171	2,160	136.62	....	3,201	....	1,032

15	Spartanburg	150,749	2,787	1,386	1,378	136.07	81.64	2,275	47.62	656
	Cherokee	35,739	661	328	326	77.87	46.72	309	27.25	89
	Union	30,636	566	282	280	118.42	71.05	402	41.45	116
	Area Total	217,124	4,014	1,996	1,984	124.00	....	2,986	....	861
	STATE TOTAL	2,106,500	44,280	21,629	21,451	100.00	59.65	26,411	34.89	7,546

FIGURE III—INCOME PER CAPITA BY COUNTIES, SOUTH CAROLINA, 1945



Given the assumption that a general State average of 60 per cent of the births and 35 per cent of the non-maternal deaths will occur in general hospitals in 1957, there remains the problem of what these percentages will be for the various counties. Since counties differ from each other with respect to per capita wealth, per capita income (see Figure III), the racial composition of the population, and the proportions of rural to urban population, it would be most unrealistic to assume that a State average would be representative of even a majority of the counties with respect to the proportion of births or non-maternal deaths hospitalized.

A careful study of such data as were available indicated that differences in per capita income provide a very satisfactory basis for estimating differences in the percentages of births and deaths that will be hospitalized in various geographical areas. Income is superior to wealth as an index of ability to pay for hospital services; many people with relatively high incomes own

little or no property, and there are many kinds of property which often yield little or no income.

It may be that, if they have equal incomes, a person living in a rural area will be less willing or more willing to use hospitals than will a person living in a town or city. For example, it is possible that the distance which a rural resident has to travel to a hospital will discourage the use of hospital facilities by such people. On the other hand, however, it is also possible that since it is more difficult and expensive for a rural resident to receive medical attention at home, rural people will be *more* willing to use hospitals than will urban people who receive equal incomes. So far as the writers of this report know, there are no data available which lend important support to either of these conclusions. It follows, therefore, that the proportion of rural to urban populatiton can not be used as an analytical tool in estimating variations among counties in the proportions of births and deaths that may be expected to occur in hospitals.

The same difficulty is encountered in an attempt to use the racial composition of the population of a given area as a factor for estimating the demand for the use of hospital facilities. It may be that there is a difference in the willingness of white people and negroes to use hopsital facilities even if their per capita incomes are the same. The data at hand, however, tend to refute rather than support this conclusion. An analysis of the relationship beteewn per capita buying power and the percentage of births hospitalized in the 48 States in 1945 revealed no deviations from the trend line which could not be explained better by differences in local customs than by differences in the racial composition of the population. An analysis of the racial composition of the population of the various counties and hospital service areas, therefore, serves no useful purpose so far as estimating the demand for hospital services is concerned. The data at hand indicate strongly that any apparent difference arising from this source would be simply a reflection of differences in the incomes of whites and negroes.

Since services in general hospitals must for the most part be paid for by the patients, there is every reason to expect that there will be a direct relationship between income and the demand for such services. Since a family's need for hospital services will tend to vary with the size of the family, per capita income is probably of more significance than income per family. One would

be led to expect, therefore, that if a county has a per capita income that is below the State average, the percentage of births and deaths hospitalized in that county will also be lower than the State average. Because of the manner in which vital statistics are reported, it was not possible to test this hypothesis by using county data, but it was possible to analyze the variations among the 48 States with respect to per capita buying power and the extent to which hospitals are utilized.

Data on 1945 per capita net buying power, by States, were calculated from the 1946 issue of *Sales Management*,[5] data on the total number of births in 1945, by States, were obtained from the U. S. Public Health Service,[6] and data on the number of hospitalized births in each State in 1945 were obtained from the booklet, "Hospital Service in the United States."[7] It was possible, therefore, to calculate for each State the number of hospitalized births per 100 total births, and to express this figure as a percentage of the national average. Also, it was possible to express each State's per capita net buying power as a percentage of the national average. The results of these calculations are presented in Table 18.

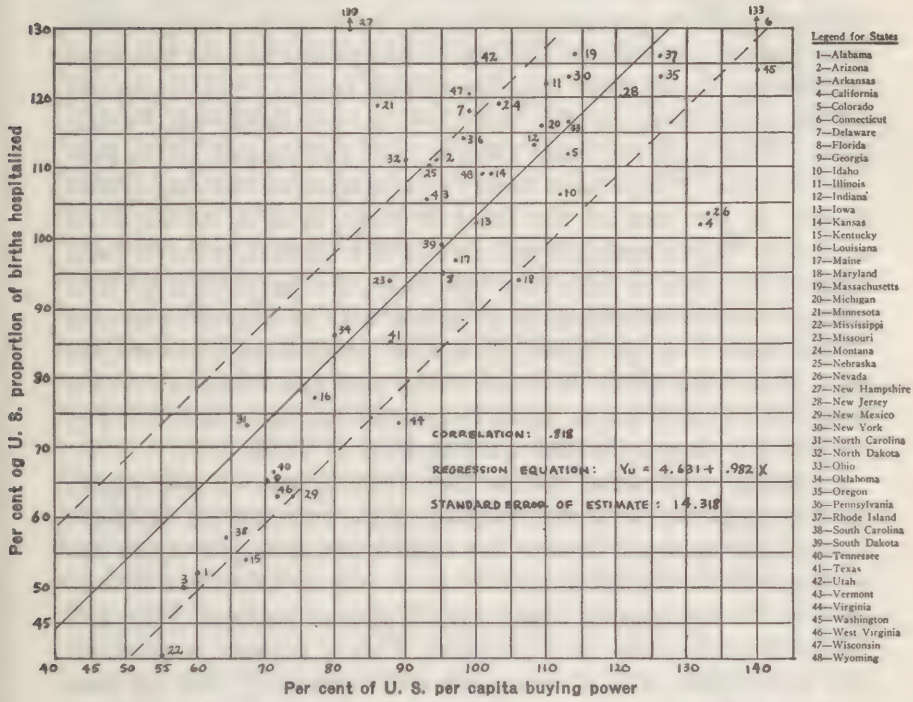
It was then a simple exercise in statistical analysis to ascertain the correlation between per capita net buying power and the percentage of births occurring in hospitals, or in this case, the correlation between deviations from the national average buying power and deviations from the national average proportion of births hospitalized. There was found to be a positive correlation of .818. A curve fitted to the data by the method of the least squares (see Figure IV), showed an almost proportionate relationship between per capita net buying power and the proportion of birth hospitalized; that is, a State with a per capita buying power 20 per cent above the national average tended also to be about 20 per cent above the national average in the number of hospitalized births per 100 total births. As a matter of fact, the relationship in the Southern States was slightly different from that prevailing in the rest of the

[5] *Sales Manager,* "Survey of Buying Power," 1946, p. 128.

[6] These data data have not been published at the time this is written, but the Public Health Service was kind enough to supply a special tabulation for use in this study.

[7] Reprinted from the *Journal of the American Medical Association,* April 20, 1946, p. 1083.

FIGURE IV—RELATIONSHIP BETWEEN BUYING POWER AND THE PROPORTION OF BIRTHS OCCURRING IN HOSPITALS, BY STATES, 1945



nation. An examination of Figure IV shows that among the States the relationship of births hospitalized to per capita net buying power was *less* than proportionate, whereas for most of the rest of the nation the relationship was *more* than proportionate. Since increased industrialization of the South, the building of hospitals at more convenient locations, and perhaps educational programs designed to promote the use of hospital facilities should have a tendency to make the hospitalization pattern in the South conform more closely with that prevailing in the rest of the nation, it is not unreasonable to conclude that by 1957 a deviation (from average) of per capita net buying power will be associated with what is for all practical purposes a proportionate deviation in the proportion of births hospitalized. Similar data on the proportion of deaths occurring in hospitals were not available, so for the purposes of this study

it is assumed that it will be related to per capita buying power to the same degree that was found to be the case with births.

The above analysis and discussion of differences among States indicates that the percentage of births (and deaths) hospitalized in a particular county in 1957 may be expected to bear the same relationship to the State average as that county's per capita net buying power bears to the State average per capita net buying power. That is, if the State average is 60 per cent of births hospitalized, and if a certain county's per capita net buying power is only 80 per cent of the State average, it is to be expected that only 48 per cent (80 per cent of 60) of that county's total births will occur in hospitals. Similarly, the proportion of that county's deaths occurring in hospitals will be only 80 per cent of the State average figure. It is thus possible to calculate for each county the proportion of births and non-maternal deaths that may be expected to occur in general hospitals in 1957. The results of such calculations are presented in Table 18.

Attention is directed to the fact 1945 figures on per capita net buying power were used in making the calculations discussed above. This *does not* involve the assumption that per capita net buying will be the same in 1957 as it was in 1945, but it does involve the assumption that rate of change between 1945 and 1957 will be the same in all counties. This is perhaps a questionable assumption, and it was made only because it was not possible to find an objective method of modifying it. As a matter of fact, the only data readily available for testing its validity tended in a general way to support the correctness of the assumption. Buying power for 1942 [8] was analyzed, and it was found that there was an increase of 45 per cent in gross buying income (not corrected for price changes) in South Carolina between 1942 and 1945. With the exception of seven counties, the rates of increase were about equal among the various counties. Data from a prewar year would have provided a more conclusive test, but such was not readily available, and there was not sufficient time to make a systematic search for figures that would be comparable.

Calculation of Hospital Bed Requirements

"Occupied" Beds—The discussion up to this point shows how an estimate was made of the total number of births and non-

[8] From a special tabulation, by counties, furnished through the courtesy of *Sales Management.*

maternal deaths that may be expected to occur in hospitals in each county of South Carolina. In order to ascertain the hospital bed requirements which correspond with these figures, it is necessary to know the number of patient-days of hospital service which will be associated with those numbers of births and deaths, and the number of hospital beds that are necessary for rendering that many patient-days of service. This can be ascertained by using what may be designated as the *bed-birth ratio* and the *bed-death ratio* and then making allowance for normal amounts of empty beds in general hospitals.[9]

In 1945 the average obstetrical patient hospitalized in South Carolina remained in the hospital eight days. This means that each patient received an average of 8/365 (or 0.022) of the total possible annual services of a hospital bed. This is the bed-birth ratio, and the total number of "occupied" beds needed for obstetrical cases in 1957 can be calculated by applying this ratio to the number of births that are expected to occur in hospitals. The results of such calculations are presented in Table 19. An "occupied" bed may be defined as the equivalent of 365 patient-days of hospital service, which is the amount of service that a bed could render in a year if it were occupied at all times.

[9] Report of Michigan Hospital Survey, *op. cit.*, pp. 101-104.

TABLE 19.—ESTIMATED NUMBER OF BEDS REQUIRED TO MEET THE 1957 DEMAND FOR SERVICES OF GENERAL HOSPITALS IN SOUTH CAROLINA, BY COUNTIES AND HOSPITAL SERVICE AREAS

		J	K	L	M	N	O	P
		Occupied Hospital Beds Required in 1957		Acceptable Beds in 1947		Occupied Beds Required in 1957		
Area No.	Counties by Hospital Service Area	Obstetrics	Other	Total No.	Occupied Beds	Total	Additional	Normal Bed Capacity Required 1957
1	Charleston	67.9	580.3	649	500	648	148	847
	Berkeley	3.7	31.1	54	31	35	4	62
	Dorchester	4.6	38.6	50	28	43	15	69
	Area Total	76.2	650.0	753	559	726	167	978
2	Colleton	5.3	45.5	....	....	51	51	80
	Hampton	3.6	31.1	....	....	35	35	59
	Jasper	1.3	11.7	38	18	13	....	27
	Beaufort	4.9	42.8	42	24	48	24	77
	Area Total	15.1	131.1	80	42	147	110	243
3	Williamsburg	6.4	38.6	106	60	45	....	73
	Georgetown	12.8	77.3	....	....	90	90	131
	Area Total	19.2	115.9	106	60	135	90	204
4	Florence	31.3	270.5	267	187	302	115	425
	Dillon	7.9	68.3	41	23	76	53	110
	Marion	9.8	84.9	63	39	95	56	138
	Horry	16.8	145.6	65	40	162	122	210
	Area Total	65.8	569.3	436	289	635	346	883
5	Orangeburg	16.7	121.4	122	84	138	54	189
	Calhoun	3.5	25.5	....	....	29	29	51
	Barnwell	5.2	38.6	....	....	44	44	71
	Bamberg	4.9	35.9	....	....	41	41	66
	Allendale	2.6	19.3	....	....	22	22	42
	Area Total	32.9	240.7	122	84	274	190	419
6	Sumter	14.5	130.4	150	110	145	35	199
	Lee	4.8	43.5	....	....	48	48	77
	Clarendon	5.1	45.5	....	....	51	51	80
	Area Total	24.4	219.4	150	110	244	134	356
7	Aiken	10.5	98.0	63	39	109	70	149
	Edgefield	3.0	28.3	....	....	31	31	55
	Area Total	13.5	126.3	63	39	140	101	204
8	Richland	42.7	507.2	650	509	550	41	716
	Lexington	7.3	86.3	....	....	94	94	136
	Fairfield	4.4	51.1	....	....	56	56	85
	Kershaw	6.5	77.3	66	41	84	43	122
	Area Total	60.9	721.9	716	550	784	234	1,059

TABLE 19.—ESTIMATED NUMBER OF BEDS REQUIRED TO MEET THE 1957 DEMAND FOR SERVICES OF GENERAL HOSPITALS IN SOUTH CAROLINA, BY COUNTIES AND HOSPITAL SERVICE AREAS—Continued

Area No.	Counties by Hospital Service Area	J	K	L	M	N	O	P
		Occupied Hospital Beds Required in 1957		Acceptable Beds in 1947		Occupied Beds Required in 1957		Normal Bed Capacity Required 1957
		Obstetrics	Other	Total No.	Occupied Beds	Total	Additional	
9	Darlington	13.8	98.0	74	53	112	59	153
	Marlboro	9.2	64.9	74	53	74	21	107
	Chesterfield	8.8	62.1	....	....	71	71	103
	Area Total	31.8	225.0	148	106	257	151	363
10	Newberry	6.8	80.0	26	13	87	74	126
	Saluda	2.4	28.3	....	....	31	31	55
	Area Total	9.2	108.3	26	13	118	105	181
11	York	20.2	164.9	155	90	185	95	293
	Chester	8.6	69.7	50	28	78	50	113
	Lancaster	7.6	62.1	55	31	70	39	102
	Area Total	36.4	296.7	260	149	333	184	508
12	Greenwood	12.7	125.6	113	69	138	69	213
	Abbeville	3.7	36.6	38	18	40	22	65
	McCormick	1.2	12.4	....	....	14	14	29
	Area Total	17.6	174.6	151	87	192	105	307
13	Anderson	26.1	199.4	182	125	226	101	325
	Oconee	8.0	60.7	35	17	69	52	100
	Pickens	8.0	61.4	....	....	69	69	100
	Area Total	42.1	321.5	217	142	364	222	525
14	Greenville	60.3	609.3	409	305	670	365	875
	Laurens	10.2	102.8	59	33	113	80	155
	Area Total	70.5	712.1	468	338	783	445	1,030
15	Spartanburg	50.1	452.6	349	257	503	246	653
	Cherokee	6.8	61.4	48	27	68	41	100
	Union	11.0	80.0	26	13	91	78	132
	Area Total	67.9	594.0	423	297	662	365	885
	STATE TOTAL	583.5	5,206.8	4,119	2,865	5,794	2,949	8,145

The bed-death ratio is calculated in a similar manner. As has already been pointed out, there is a stable and uniform relationship between the number of deaths occurring in hospitals and the number of patient-days of service rendered. In 1945, the general hospitals of South Carolina rendered 252 patient-days of non-obstetrical services for every non-maternal death occurring in such hospitals. This means that each non-maternal death in general hospitals represented 252/365 (or 0.69) of the total possible annual use of a bed, and that the number of "occupied" beds required per non-maternal death in general hospitals was 0.69. Since there is every reason to believe that approximately this same bed-death ratio will prevail in 1957, the expected number of hospitalized non-maternal deaths in each county was multiplied by 0.69 to give the number of "occupied" beds required for non-obstetrical purposes in 1957 (see Table 19). The total number of "occupied" beds required in general hospitals is, then, the sum of those required for obstetrical purposes and those required for non-obstetrical purposes.

Normal Bed capacity—The actual number of beds that are required to provide a given number of patient-days of service, that is, the actual number that will be equivalent to a given number of "occupied" beds, depends upon the occupancy rates of the hospitals in which the beds are located. For example, if the occupancy rate is 75 per cent, 100 beds will be the equivalent of 75 "occupied" beds, and anything less than a 100-bed hospital will be too small to meet the requirements of a community which needs 75 "occupied" beds.

> "There is no one occupancy rate which can be said to be 'normal' for all sizes and types of hospitals. Occupancy rates vary according to size and type of hospital. Small hospitals usually have lower occupancy rates than do large hospitals.
>
> "A general hospital should have sufficient beds to meet day to day and seasonal variations in demand for care, it should neither turn patients away nor house them in room and hall space not constructed for patient use . . . Ideally, a general hospital should have enough beds so that under normal conditions it would be completely filled on only one or two days during the year.
>
> "On the basis of both theory and experience, it has been found that the square root of the average daily census of a general

hospital is a practical device which can be used to estimate the probable variation in the daily census. Both statistical theory and study of individual hospital data indicate that the extreme limits of occupied beds will not be greater or less than the average census plus or minus approximately four times the square root of the average daily census. That is to say, it is unlikely that the need for beds in the course of a year will exceed the average census by four times the square root of that average.

"[The above discussion indicates] that a hospital should have an average number of vacant beds equal to about four times the square root of the average daily census. This is not a rigid mathematical law. Some hospitals will find that they can . . . without great inconvenience . . . operate with a margin of vacant beds equal to about three times the square root of the average census. Under such conditions, the hospital may be said to have a high level of occupancy; whereas, with a margin of beds equal to four times the square root of the average census, the hospital would have a low level of occupancy." [10]

The above conclusions, quoted from the Report of the Michigan Hospital Survey, are buttressed by data demonstrating that the theoretical "low" and "high" rates of occupancy describe with remarkable accuracy the actual occupancy rates prevailing in 1940 ("low") and in 1945 (" high"). Some of these data are presented in the following table:

TABLE 20.—OCCUPANCY RATES OF AMERICAN MEDICAL ASSOCIATION REGISTERED GENERAL HOSPITALS, BY SIZE, UNITED STATES, 1940 AND 1945*

	PER CENT OCCUPANCY			
	Actual		Theoretical	
Size (Beds)	1940	1945	Low	High
Under 20	46.4	57.7	38.4	45.4
20 to 39	50.7	61.8	48.2	55.4
40 to 59	57.2	67.9	56.5	63.4
60 to 79	62.4	71.1	62.0	68.5
80 to 99	66.3	73.1	65.5	71.7
100 to 139	68.6	76.4	68.9	74.7
140 to 199	71.2	79.8	73.0	78.3
200 to 299	74.6	79.3	76.9	81.6
300 to 499	76.0	79.2	80.8	84.8
500 to 799	80.6	78.8	84.7	88.1
Over 799	79.8	70.3	89.8	92.1
All Sizes	69.4	74.8	71.5	76.6

* Source: *Hospital Resources and Needs*, Report of the Michigan Hospital Survey, The W. K. Kellogg Foundation, Battlecreek, Michigan, 1946, Page 107.

[10] *Ibid*, pp. 105-106.

The theoretical rate of occupancy is based upon the normal curve pattern of variation from the average daily census. Of further significance for the purposes of this study is the fact that occupancy rates in South Carolina's general hospitals in 1945 were similar, except for explainable variations, to the theoretical "high" rates of occupancy shown in Table 20.

It is quite probable that occupancy rates in 1957 will resemble the prewar rates of 1940 more than the wartime rates of 1945. Therefore, the theoretical "low" rates of occupancy were used as a basis for estimating the total number of general hospital beds needed to meet each county's demand for "occupied" beds. Since the rate of occupancy varies directly with the size of the hospital, the ratio of "occupied" beds to total beds will differ from county to county. This means that a county or hospital community which can support only a small hospital will have a relatively large proportion of its hospital investment tied up in unoccupied beds, and that service of equal quality will tend to cost more in a small hospital than in a large one.

Specifically, the method of converting "occupied" bed requirements to total bed requirements in the various counties was as follows: (1) Where there were no existing acceptable beds in a county, the additional beds were, of course, treated as a hospital unit for purposes of calculating the expected rate of occupancy. (2) Where the existing acceptable beds in a county were in a single hospital, the additional requirements were counted as additions to that hospital, and the size after enlargement was the basis for ascertaining the expected rate of occupancy. (3) Where the existing acceptable beds were distributed among two or more hospitals, the additional bed requirements were treated as a new and separate hospital for the purpose of ascertaining the expected occupancy rate. The results of these calculations are presented in the last column of Table 19, which shows for each county the total number of hospital beds, assuming average rates of occupancy in relation to size of hospital, that will be required to meet the expected demand in 1957 for the services of general hospitals.

It is to be noted that all of these estimates refer to the amount of facilities (wherever located) required to meet the requirements of the residents of the area under consideration. Due to irregularities in the shapes of political boundaries, due to the fact that a political sub-division's major town or city may not be located

in the center of the political entity, and due to the fact that two or more counties may have to be combined in order to get support for a hospital of economical size, it may be convenient or necessary for a considerable number of people to cross county or hospital service area lines (as delineated in this study) to receive hospitalization. It follows, as is pointed out in the recommendations, that hospital facilities that need to be *located in* a particular county or community are not necessarily the same as those needed to meet the demands of the residents of that county or community.

Illustration of Calculations

In order to summarize briefly the method used in estimating the 1957 requirements for facilities in general hospitals, the calculations for a single county are presented below. Laurens County is selected for this purpose.

The population trend for the Greenville Hospital Service Area (in which Laurens County is situated) indicates an area population of 226,212 in 1957. Since Laurens County had 20.59 per cent of the area's total population in 1943, it is assumed that the 1957 population of Laurens County will be 20.59 per cent of 226,212 or 46,577.

The birth rate for the Greenville Hospital Service Area was 17.27 per 1000 population in 1938-39, and it is assumed that this rate will prevail in 1957. Multiplying the county's 1957 population (46,577) by 0.01727 gives 804 as the estimated number of births in Laurens County in 1957. Similarly, the 1957 death rate is estimated as 9.598 per 1000 population, and when total 1957 population is multiplied by 0.009598 it is found that 447 deaths may be expected to occur in Laurens County in 1957. But if the maternal death rate is 3 per 1000 births, two of the deaths will be maternal deaths, and the total of non-maternal deaths may be expected to be 445.

In 1945 the per capita net buying power in Laurens County was 95.82 per cent of the State average, and it is felt that there will be an equal deviation from the State average proportions of births and non-maternal deaths occurring in general hospitals. If, for the State as a whole, 60 out of 100 births and 35 out of 100 non-maternal deaths occur in such hospitals, the figures for Laurens County are expected to be 95.82 per cent of the State

figures, or 57.49 per cent of the births and 33.54 per cent of the non-maternal deaths. Multiplying 804 (the total number of births) by 0.5749 gives an estimate of 462 hospitalized births in 1957, and multiplying 445 by 0.3354 gives an estimate of 149 hospitalized non-maternal deaths.

Next, the expected number of hospitalized births (462) is multiplied by the bed-birth ratio (0.022) to give the number of "occupied" beds that will be needed for obstetrical purposes. The figure is 10.2 "occupied" beds. Similarly, the expected number of hospitalized non-maternal deaths (149) is multiplied by the bed-death ratio (0.69) to give an estimate of 102.8 "occupied" beds needed for non-obstetrical purposes. The sum of these two figures is 113, which is the total number of "occupied" beds that are expected to be required to meet the 1957 demand of the residents of Laurens County for services in general hospitals.

The problem of how many actual beds will be necessary to provide 113 "occupied" beds is related to the rate of occupancy that may be expected. This problem is solved by consulting the next to last column of Table 20. A little experimenting will show that a hospital big enough to provide 113 "occupied" beds will fall in the 140-199 size group. Since the rate of occupancy for this group is 73.0 per cent, the total number of beds is calculated by dividing 113 by 0.73. The result is an estimated 155 beds needed to meet Laurens County's 1957 requirements for the services of general hospitals.

Recommendations for General Hospital Facilities

Basis for Designating Acceptable Facilities

In setting up a plan for a system of general hospitals adequate to meet the requirements of all of the people of South Carolina, and in making specific recommendations for the construction of additional facilities, it was necessary to give consideration to existing facilities. All existing facilities, however, can not be fitted into the integrated State plan contemplated in this report. In order for South Carolina to qualify for a grant of Federal funds to be used in building hospital facilities, it is necessary that there be enacted a State law requiring that certain minimum standards be met in the maintenance and operation of hospitals receiving Federal aid.

For the purposes of this report, the following factors were used as a basis for determining whether or not to consider a hospital as "acceptable" in setting up the State plan. (1) In order to be considered "acceptable," the hospital building must not be a fire hazard, and must, in the case of small hospitals, be so constructed and arranged as to allow it to be enlarged into an efficient operating unit. Therefore, hospitals housed in frame buildings not having adequate fire protection, and hospitals housed in buildings not originally constructed as hospitals, were in most cases omitted from the list of existing "acceptable" facilities. (2) In order to be considered "acceptable" there was established the general rule that a hospital must have at least 50 beds or must be able to qualify for expansion up to 50 beds under the construction program provided for by Public Law 725. This is because small hospitals cannot be operated as economically as larger ones. Since no hospital operated for private profit can obtain public funds for expansion purposes, several small proprietary hospitals were omitted from the list of "acceptable" facilities. Similar non-profit hospitals were included because they can qualify for a grant of Federal funds for expansion purposes. For example, the hospital at Ridgeland (Jasper County) was left in the plan even though it does not have as many as 50 beds. Even though no expansion is indicated at present, this hospital has acceptable facilities which could be enlarged if the need arose. Appendix Table IIIA lists and gives certain information about the existing general hospitals which were not considered "acceptable" for the purposes of this report.

It is to be emphasized that the omission of a hospital from the "Acceptable" list is not necessarily to be construed as a suggestion that this hospital should cease operating. As a matter of fact, the recommendations for new facilities are based upon the assumption that a number of the hospitals outside the integrated State system will continue to operate. For example, the two proprietary hospitals at Travelers Rest (in Greenville County) are not included in the State plan, and the plan calls for no additional facilities at Travelers Rest. If, however, the two existing hospitals should discontinue operations, it would then be necessary to build facilities at Travelers Rest in order to serve the people of that community. Similar situations prevail at Lake City, Clinton and Woodruff. If these hospitals were reorganized as nonprofit institutions they could qualify for expansion under the Federal program.

TABLE 21.—RECOMMENDATIONS FOR THE CONSTRUCTION OF ADDITIONAL GENERAL HOSPITAL FACILITIES IN SOUTH CAROLINA BY COUNTIES

Area No.	COUNTY	Number of Existing Acceptable Hospitals	Existing Acceptable Beds	1957 Bed "Demand"	* Classification of Hospital Community	Beds Allowed by Federal Regulations by Areas	RECOMMENDATIONS		ASSIGNMENT OF NEW BEDS		
							Number of Hospitals	Total Number of Beds	Hospitals	Community Clinics	Total New Beds
1	Charleston	3	649	847	B	728	4	1,000	351	..	351
	Berkeley	1	54	62	R	61	1	60	6	..	6
	Dorchester	1	50	69	R	52	1	50	....	..	....
	Area Total	5	753	978		841	6	1,110	357	..	357
2	Colleton	..	....	80	I	162	1	100	100	..	100
	Hampton	..	....	59		....	1	50	50	..	50
	Jasper	1	38	27	R—	78	1	38	....	..	....
	Beaufort	1	42	77		....	1	42	....	..	....
	Area Total	2	80	243		240	4	230	150	..	150
3	Georgetown	..	....	131	I	103	1	100	100	..	100
	Williamsburg	2	106	73	R	85	2	106	....	..	....
	Area Total	2	106	204		188	3	206	100	..	100
4	Florence	2	267	425	I	259	2	350	83	..	83
	Dillon	1	41	110	R	66	1	65	24	..	24
	Marion	1	63	138	I	110	1	100	37	..	37
	Horry	1	65	210	I	193	1	150	85	..	85
	Area Total	5	436	883		628	5	665	229	..	229

5	Orangeburg	1	122	189	I	349	1	256	128	6	134
	Calhoun	..	....	51		....	..	10	....	10	10
	Bamberg	..	....	66		....	..	10	....	10	10
	Barnwell	..	....	71	R	68	1	50	50	..	50
	Allendale	..	....	42		....	..	10	....	10	10
	Area Total	1	122	419		417	2	336	178	36	214
6	Sumter	1	150	199	I	270	1	200	50	..	50
	Lee	..	....	77		....	1	50	50	..	50
	Clarendon	..	....	80	R—	65	1	50	50	..	50
	Area Total	1	150	356		335	3	300	150	..	150
7	Aiken	1	63	149	I	246	1	131	62	6	68
	Edgefield	..	....	55		....	1	50	50	..	50
	Area Total	1	63	204		246	2	181	112	6	118
8	Richland	3	650	716	I	469	4	780	130	..	130
	Lexington	..	....	136	R	89	1	81	75	6	81
	Fairfield	..	....	85	R	52	1	50	50	..	50
	Kershaw	1	66	122	I	139	1	106	34	6	40
	Area Total	4	716	1,059		749	7	1,017	289	12	301
9	Darlington	1	74	153	I	167	1	131	51	6	57
	Marlboro	1	74	107	I	116	1	100	26	..	26
	Chesterfield	..	....	103	R	76	1	56	50	6	56
	Area Total	2	148	363		359	3	287	127	12	139
10	Newberry	1	26	126	I	173	1	106	74	6	80
	Saluda	..	....	55		....	..	10	....	10	10
	Area Total	1	26	181		173	1	116	74	16	90

TABLE 21.—RECOMMENDATIONS FOR THE CONSTRUCTION OF ADDITIONAL GENERAL HOSPITAL FACILITIES IN SOUTH CAROLINA BY COUNTIES—Continued

Area No.	COUNTY	Number of Existing Acceptable Hospitals	Existing Acceptable Beds	1957 Bed "Demand"	* Classification of Hospital Community	Beds Allowed by Federal Regulations by Areas	RECOMMENDATIONS		ASSIGNMENT OF NEW BEDS		
							Number of Hospitals	Total Number of Beds	Hospitals	Community Clinics	Total New Beds
11	York	3	155	293	I	221	3	230	75	..	75
	Chester	1	50	113	I	109	1	100	50	..	50
	Lancaster	1	55	102	R	56	1	55	....	..	....
	Area Total	5	260	508		386	5	385	125	..	125
12	Greenwood	2	113	213	I	148	2	178	65	..	65
	Abbeville	1	38	65	R	66	1	50	12	..	12
	McCormick	..	....	29		....	..	6	....	6	6
	Area Total	3	151	307		214	3	234	77	6	83
13	Anderson	2	182	325	I	306	2	306	118	6	124
	Oconee	1	35	100	I	124	1	106	65	6	71
	Pickens	..	....	100	I	135	1	100	100	..	100
	Area Total	3	217	525		565	4	512	283	12	295
14	Greenville	2	409	875	I	561	3	659	250	..	250
	Laurens	1	59	155	I	146	1	125	66	..	66
	Area Total	3	468	1,030		707	4	784	316	..	316

15	Spartanburg	2	349	653	I	486	2	452	103	..	103
	Cherokee	1	48	100	I	116	1	100	52	..	52
	Union	1	26	132	R	62	1	60	34	..	34
	Area Total	4	423	885		664	4	612	189	..	189
	STATE TOTALS	42	4,119	8,145		6,712	56	6,975	2,756	100	2,856

Based upon Federal allowance of 4.5 beds for 1,000 population (1943) the State of South Carolina would be allowed 8,053— Beds.

* B—Base

I —Intermediate

R—Rural

Specific Recommendations

The State survey of existing facilities in general hospitals revealed a normal bed capacity of 4484 in 1945. However, hospitals having a total normal bed capacity of 375 beds, for reasons noted in the preceding section, were considered unacceptable for purposes of a State hospital plan. On the other hand, the Urological Institute (10 beds) at Orangeburg is operated in such close conjunction with the Tri-County Hospital that the former was treated as part of a general hospital, rather than as a special hospital. South Carolina had, therefore, 4119 acceptable beds (normal capacity) in general hospitals in 1945. The distribution by counties is presented in Table 21.

In the making of specific recommendations for counties and communities, it was necessary to take a number of factors into consideration. Some of the factors considered were: the estimated demand for hospital services in 1957, the number of beds which the Federal government would help finance, travel distances which might affect the use of hospital facilities, the possibility of people in one district or community patronizing the hospital in an adjoining district or community, the amount of local funds available or potentially available for building purposes, and the necessity for retaining in the State pool a sufficient number of unallocated beds to provide future flexability to meet unforeseen conditions. It follows, of course, that actual recommendations may differ considerably from the "bed demand" figure arrived at by economic analysis and from the "beds allowed" figure arrived at by application of the Federal formula. As a matter of fact, allocation according to the Federal formula would result in the allocation of 1433 fewer beds than allocation according to economic and population trends, and would result in a maldistribution of facilities within a few years. On the other hand, allocation strictly according to the estimated demand for hospital services in 1957 would leave no beds in the State pool (actually, there would be a small deficit) and would make it impossible to have a building program flexible enough to meet unforeseen developments.

For some hospital communities the estimated 1957 demand for facilities in general hospitals is greater than the number allowed by the Federal formula, and in other cases the estimated number of beds demanded is less than the number allowed. Out

of the 37 hospital communities delineated under this plan, the recommended number of beds is in 14 cases approximately equal to one or both of the figures calculated by formula, is between the two formula figures in 8 cases, is lower than either of the formula figures in 13 cases, and is in 2 cases higher than either the estimated number demanded or the number which can be built under Public Law 725.

Attention is called to the fact that "beds allowed by Federal formula" refer to the size of hospital that a community of a given classification (base, intermediate or rural) can obtain Federal assistance to build *without* having to obtain an allocation of additional beds from the State pool. The State Agency which administers the hospital construction program will have the power to allocate additional beds where the need is apparent, and the Federal Government will render financial aid if the additional allocation is approved by the Surgeon General. In the recommendations summarized in Table 21 there are 9 cases where the beds "allowed by the Federal formula" are less than the number recommended. In 2 cases of the nine cases, the recommended facilities are already in existence and no additional construction is necessary.

At the time this report is being written there is available no clear and definite ruling on the question of whether and to what extent hospital beds allowed in a community under Public Law 725, but not allocated to that community by the State construction agency, will be allowed to revert to the State pool for allocation to any community in which they appear to be needed. If all such beds go into the State pool, these recommendations will result in a pool of 1,290 beds. On the other hand, if all such beds must be "earmarked" for the particular hospital communities in which they would be placed if beds were allocated strictly according to the Federal formula, the State pool will amount to 719 beds, with 571 additional beds "earmarked" for certain specific counties or communities.

It was found that in some counties population and income were insufficient to justify the construction of a hospital, and that in other counties there were some communities too small to support separate hospitals but located at considerable distances from a hospital. In these counties and communities there is a need for a few hospital beds to meet emergencies. This problem can be met by establishing what may be designated as

community clinics to perform a limited number of the functions of a general hospital. It is recommended, therefore, that a total of 14 community clinics be established. The suggested allocation of these facilities is presented in Table 21.

It is recommended that there be no fewer than six and no more than ten beds in a community clinic.

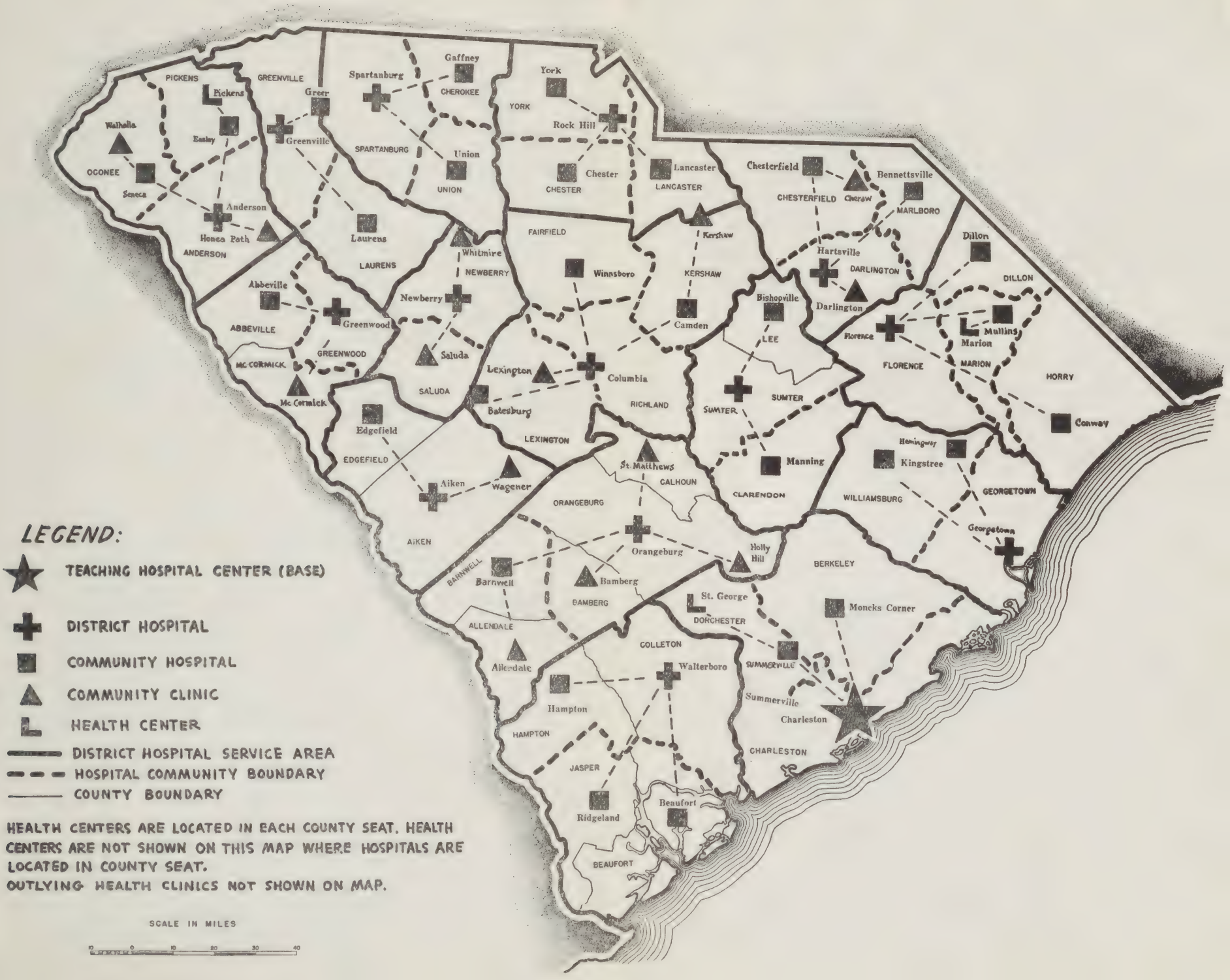
If patients are to receive good, safe and adequate care, it will be economically unsound for individuals or corporations to undertake the operation of such small units, and it is recommended that the combination of the health center and hospital, known as the community clinic, be operated by the Department of Health. This does not mean that the Department of Health would be operating hospitals and practicing medicine in competition with other hospitals or members of the medical profession. The Department of Health will not be permitted to enter patients into community clinics. All patients needing care or hospitalization must be referred to a practicing physician in the community who in turn might enter such patient into the community clinic. The Department of Health should furnish the necessary personnel for the administration of the community clinic and for the care of the patients therein. While the personnel would be directly responsible to the Department of Health, they would be subject to the orders of the practicing physician in the care and treatment of his patient. Personnel in other technical departments would carry out the orders of the physician as prescribed above.

In some instances it may be desirable for a physician in the community to have offices in the building housing the community clinic. This would afford him greater advantages to diagnose and treat sickness and injury and allow him to serve a greater number of patients. This type of accommodation is designed for serving the community and for the convenience of the physicians in the treatment of emergency and minor cases. Persons requiring major surgery or further diagnostic study would be referred to an affiliated hospital.

It is believed by having the operation of the community clinic under the direction of the Health Department, modern hospital standards will be maintained in these small bed units.

The recommended integrated general hospital plan provides for 56 general hospitals and 14 community clinics with a total normal bed capacity of 6975. This is 3.9 beds per 1000 population

FIGURE V—AN INTEGRATED HOSPITAL PLAN FOR SOUTH CAROLINA



(1943 civilian population). At an average occupancy rate of 70 per cent these hospitals would provide a total of 1,782,113 patient-days of service per year, or approximately one day of service per capita per year. This is an increase of 56 per cent over the number of patient-days of service rendered by general hospitals in South Carolina in 1945. Even after this plan has been put into effect South Carolina will still rank below many other states in the amount of hospital facilities per capita. It is felt, however, that the recommendations made in this report point the way toward sound and substantial progress.

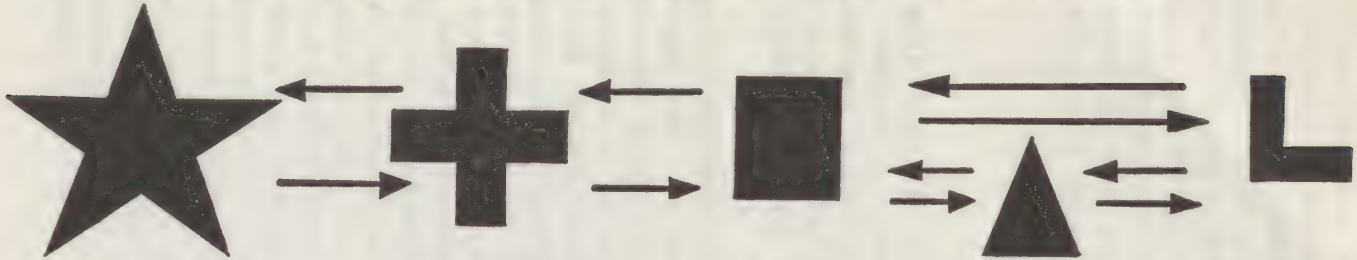
Integrated Hospital Plan

The integrated hospital plan presented in this report (Figure V) is a workable systematic arrangement of hospitals. It should serve as a guide for the orderly growth of hospitals in a manner to provide good medical care for the people of the State. Figure VI shows the services that should be rendered by each unit of the integrated hospital plan.

The integrated hospital plan for general hospitals in South Carolina embraces a framework composed of a base hospital, district hospitals, community hospitals, and several community clinics. The service area for the base hospital, to be operated in conjunction with South Carolina Medical College, extends over the entire State. Each district hospital serves the community in which it is located in addition to providing diagnostic and other special facilities for community hospitals located in other counties within the district. Patients that cannot be treated in the district hospital are transferred to the base hospital. The community hospital usually serves one county, but in some cases the service area includes more than one county. Patients requiring specialized treatments are transferred to district hospitals. Community clinics in most cases serve a radius of ten miles and handle emergency cases. If patients require further treatment they are transferred to community hospitals.

Health centers are located in the county seats of the 46 counties in the State. The health centers are operated by the State Board of Health and their functions are primarily administrative. Several out-lying health clinics are located in each county for educational purposes.

FIGURE VI—A COORDINATED HOSPITAL SERVICE PLAN FOR SOUTH CAROLINA



BASE

TEACHING RESEARCH
CONSULTATION
Cancer Clinic
Psychiatric Service
Heart Clinic
Major Surgery
Internal Medicine
Obstetrics
Pediatrics
Orthopedic Surgery
Communicable Diseases
- Tuberculosis
- Venereal Disease
- Other

Teaching
- Nurses
- Interns
- Residents
- Post Graduates

Laboratory
- X-ray
- Pathology
- Bacteriology
- Chemical

Physiotherapy
Dentistry
Eye, Ear, Nose, Throat
Dietetics

DISTRICT

Major Surgery
Obstetrics
Internal Medicine
Communicable Diseases
- Tuberculosis
- Venereal Disease
- Other

Pediatrics
Eye, Ear, Nose, Throat
Dentistry
Physiotherapy
Laboratory
- X-ray
- Pathology
- Bacteriology
- Chemical

Teaching
- Nurses
- Interns
- Dietetics

COMMUNITY HOSPITAL

Internal Medicine
Obstetrics
Eye, Ear, Nose, Throat
Dentistry
General Surgery
- Laboratory
- X-ray
- Bacteriology

COMMUNITY CLINIC

Obstetrics
Emergency Medical and
Minor Surgery
Laboratory
- X-ray
- Bacteriology

Dentistry
Private Office or
Offices for Private
Physicians

HEALTH CENTER

Administrative Public
Health Offices
- Health Officer
- Sanitarian
- Public Health Nurses
  - Maternal and Child Health
  - Tuberculosis
  - Venereal Disease
- Public Health Education

The plan for hospital service submitted suggests that the preventive as well as the curative aspects of medical care be fostered by the hospital to the end that the hospitals, official and voluntary health agencies will be closely coordinated. It is further suggested that the Health Department or some of its activities be housed in or located near community hospitals.

In order to summarize the coordinated hospital service plan (Figure VI) and the integration of hospitals (Figure V) the line of transfer of a patient is presented below. The town of Allendale is selected as the place of residence for the patient.

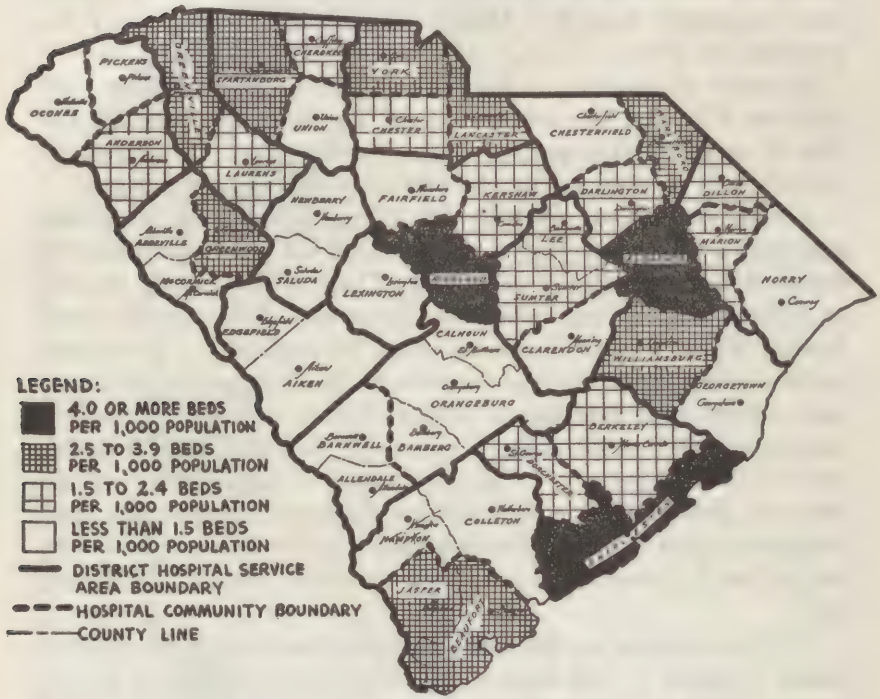
A man residing in the town of Allendale is feeling very bad and calls a physician. Upon examination the physician observes the need for emergency treatments. There is no hospital located at Allendale so the treatments are given at the community clinic located there. After the emergency treatments are given the patient is transferred to the community hospital located in Barnwell, where it is determined that the patient needs a complete diagnosis. He is, therefore, transferred to the district hospital located in Orangeburg. The physicians at Orangeburg decide that the patient has a rare and exceptional disease requiring treatments that are highly specialized, and they recommend that the patient be transferred to the base hospital located at Charleston.

The lines drawn on the map showing the integration of hospitals (Figure V) are lines of transfer rather than lines of authority. The lines of transfer from the district hospitals to the base hospitals are omitted on the map. Of course, if a community clinic is closer to a district hospital than a community hospital it would be more practical for the patient to be transferred directly to a district hospital rather than travel a longer distance to a community hospital. In the final analysis travel distance is the determining factor in the selection of hospitals for the acutely ill.

The integrated hospital plan as presented in Figure V shows only the principal facilities. In the larger cities of the State there are usually several hospitals, but for the purposes of this plan the principal facility is presented to show the integration of that facility with other hospitals in the outlying areas. The subordinate hospitals in the same location as the principal facility will be integrated with the latter in the same way that outlying hospitals in the district are integrated with it.

FIGURE VII—ACCEPTABLE BEDS PER 1,000 POPULATION BY HOSPITAL COMMUNITIES, SOUTH CAROLINA, 1945

(Based on 1943 Estimated Civilian Population)



Relation of Hospital Facilities to Population

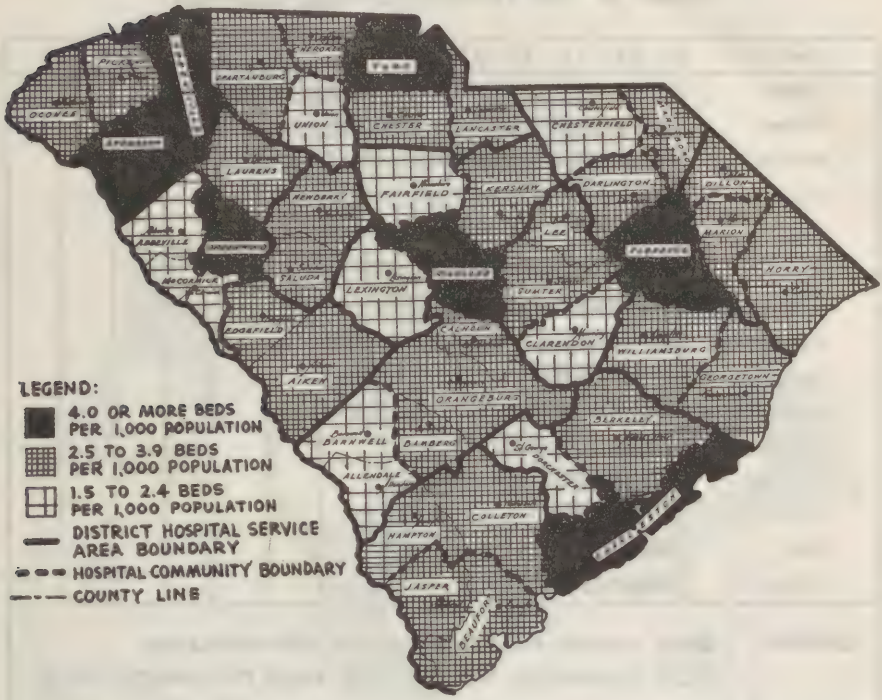
The acceptable and recommended beds per 1000 population, shown in Figures VII and VIII, were calculated on the basis of hospital communities. In the hospital communities where there is a district hospital, the beds per 1000 population appear to be somewhat excessive, but actually people from other hospital communities in the district have access to the district hospital.

Generally the rural areas have the least number of acceptable and recommended beds per 1000 population. On the other hand, the percentages of recommended increase in acceptable beds are higher for the rural areas than for urban areas.

The bed-population ratio for the State as a whole presents a more adequate picture of the situation. The bed ratio for the State is not greatly affected by people crossing hospital service

FIGURE VIII—RECOMMENDED BEDS PER 1,000 POPULATION BY HOSPITAL COMMUNITIES, SOUTH CAROLINA

(Based on 1943 Estimated Civilian Population)



area boundaries. At the present there are 2.3 acceptable beds per 1000 population (1943 estimated civilian population) in the State. It is recommended that this ratio be increased to 3.9 beds per 1000 population.

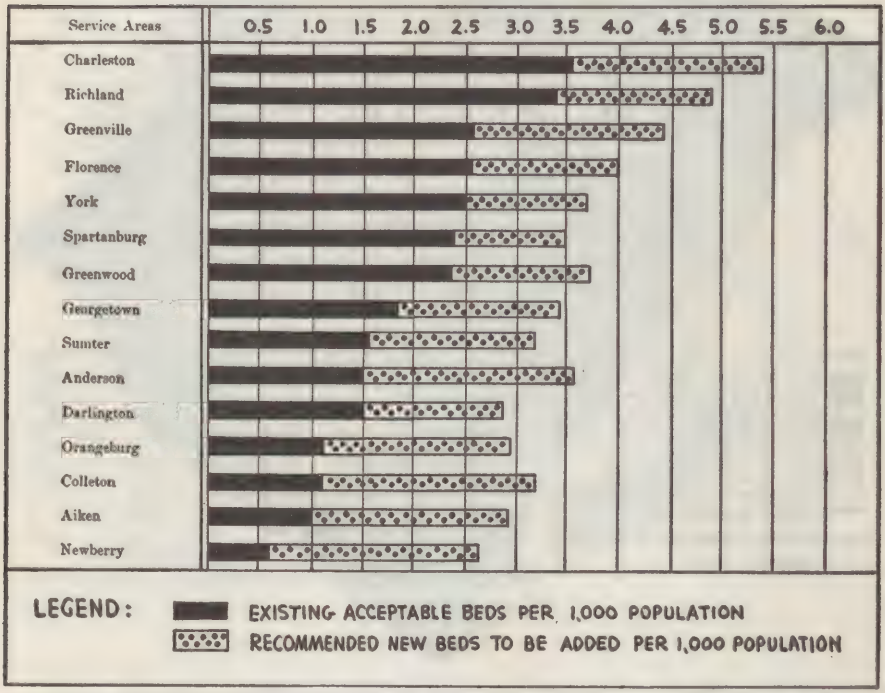
Relation of Recommendations to the Existing Facilities

The relation of recommended beds to acceptable existing beds is presented in Figure IX on a district hospital service area basis. The reason that the Charleston area shows a higher ratio of beds to population is due to the plan that the base hospital at Charleston will serve the entire State as well as the local area surrounding Charleston.

Figure IX shows the existing acceptable beds and the recommended beds to be added per 1000 population for each district hospital service area. The extremity of the bar shows the num-

FIGURE IX—ACCEPTABLE AND RECOMMENDED BEDS PER 1,000 POPULATION BY HOSPITAL SERVICE AREAS, SOUTH CAROLINA

(Based on 1943 Estimated Civilian Population)



ber of beds per 1000 population that would exist if the recommendations were carried out.

Travel Distances

As has been mentioned before, travel distance is a major determining factor in the selection of hospitals for the acutely ill.

The existing geographical distribution of general hospitals in South Carolina is definitely inadequate (Figure X). Of the 4484 general hospital beds in the State, 60 per cent are located in the six largest populated counties. There are 13 counties that have no hospital beds. The greatest deficiency of hospital facilities exists in the rural areas. In some areas it is necessary to travel more than thirty miles to reach hospital facilities.

SOUTH CAROLINA, 1947

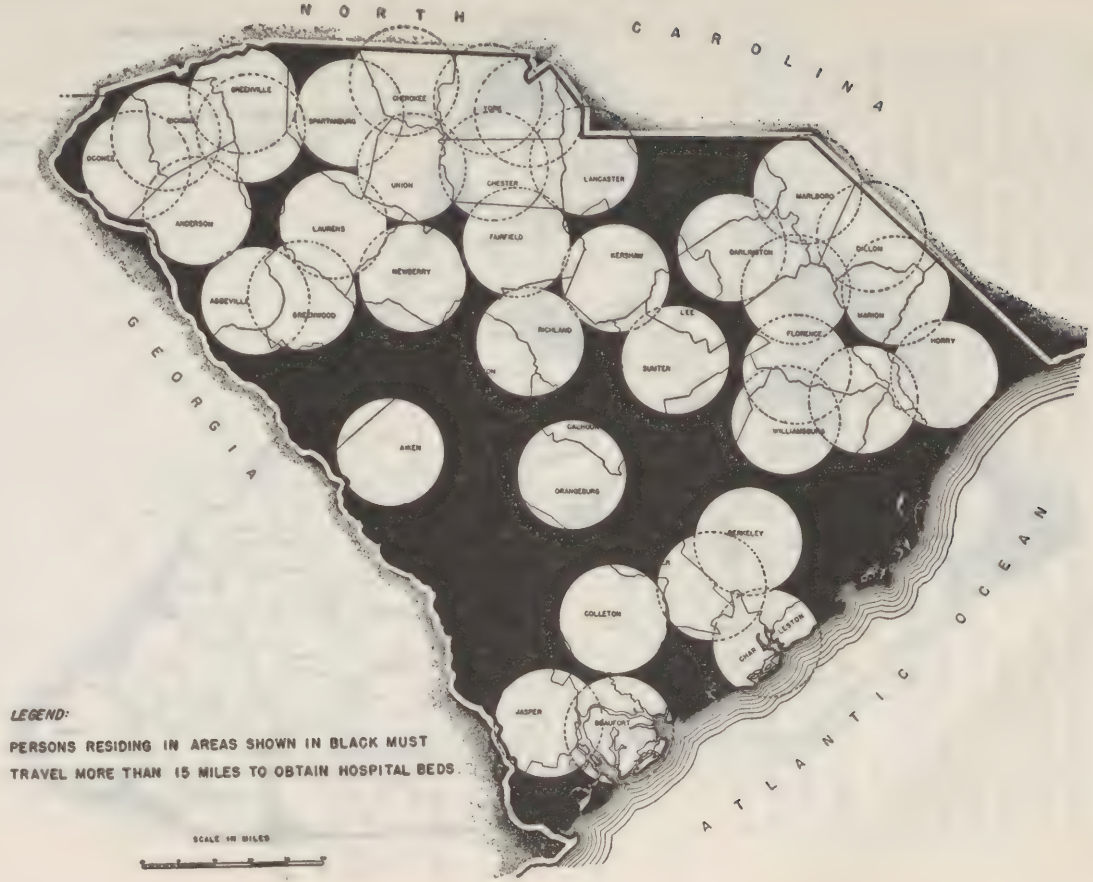


FIGURE XI—DISTRIBUTION OF EXISTING AND PROPOSED HOSPITAL FACILITIES, SOUTH CAROLINA, 1947

Figures X and XI show a distinct contrast between the areas of the State that are more than fifteen miles from general hospital facilities under the recommended plan as compared with the existing situation. Most of the black area shown in Figure XI is very sparsely populated. The large black area northeast of Charleston is the Francis Marion National Forest. The black area between Charleston and Beaufort as shown in Figure XI consists mainly of swampland.

There is an error in Figures X and XI in that the hospital located at Clinton was omitted. If a circle were drawn with a radius of fifteen miles around Clinton the black area west of Newberry and south of Laurens would be eliminated.

Chapter VI

SPECIAL HOSPITALS

Time was not available to permit a detailed study of the facilities for the care of tuberculosis, nervous and mental diseases, or the care of chronic and convalescent patients. However, some analysis and tabulations of data concerning existing hospitals and care for these patients are included in this report.

Allied Hospitals

Allied hospitals are those which, while limiting admissions to certain types of cases, are allied to the general hospitals because the types of patients which are admitted to them are also usually admitted to general hospitals.

Of the 8 existing allied hospitals in the State, only 4 are considered to be acceptable (Appendix Table III-B) for reasons already noted. The Urology Hospital at Orangeburg is considered to be a part of the Tri-County General Hospital. The remaining 3 allied hospitals are the two orthopedic hospitals at Greenville and Florence and the venereal disease hospital at Florence.

If the orthopedic and venereal disease hospitals are expanded they should be expanded on a statewide basis and the beds should be allotted from the State pool. Other types of allied hospitals are not recommended because these patients can be treated in a general hospital. No separate facilities are recommended for the care of chronic and convalescent patients at this time, but the general hospitals should make provision for the care of this type of patient. When additional facilities for the chronic and convalescent become necessary it may be advisable to consider the construction of such facilities on a State basis closely related to district hospitals.

Nervous and Mental Institutions

There are only 3 hospitals for nervous and mental disease patients in South Carolina. Two are operated by the State and the other is a private hospital. The 1945 statistics disclose a bed capacity in all 3 of these institutions of 5840. This is the bed complement or the actual number of beds set up for patients, whereas the buildings were designed to accommodate 4038 pa-

tients which is the normal bed capacity. There is, therefore, a very crowded condition in nervous and mental hospitals. On the basis of the minimum standard of 5 beds per 1000 population, South Carolina should have a total of 8948 beds, approximately twice as many beds for nervous and mental patients as now exist under normal bed capacity. The survey revealed the following information about nervous and mental hospitals:

Table 22—Selected Data on the Operation of Nervous and Mental Institutions in South Carolina, 1945

Number of Hospitals	3
Number of Beds (complement)	5,840
Patients Admitted	2,275
Patients Treated	8,016
Patient Days of Service	2,101,492
Deaths	452
Average Length of Stay	262
Per Diem Cost	1.04
Per Cent Occupancy	98.59

In planning hospitals for nervous and mental disease patients it is recommended that such hospitals be located in cities near the district hospitals, and that integration of service between general hospitals and nervous and mental institutions be established to provide surgical care and consultation services in other special fields of medicine. It is the general opinion of hospital administrators and members of the medical profession that a nervous and mental hospital should not have over a 5000 normal bed capacity. Increases in size above this figure usually reduce efficiency of operation and quality of care of patients. Although 5000 normal bed capacity may be considered the maximum it would be preferable for future construction to limit such institutions to 2500 beds.

Tuberculosis Hospital

There are 6 hospitals in South Carolina for tubercular patients. These hospitals have a total bed capacity of 903 beds, 549 beds for white patients and 354 for negroes. On the basis of a minimum requirement of 2½ times the average annual numof deaths from tuberculosis in the State over the four year period

from 1940 to 1944, inclusive, the State should have 1875 beds for tuberculosis, and most of these should be for the treatment of negro patients. The locations of existing facilities are shown in Table 23 and data on 1945 operations are presented in Table 24.

Table 23—Location of Tuberculosis Hospital Facilities in South Carolina, 1945

County	Bed Capacity		
	Total	White	Negro
Charleston	64	28	36
Richland	72	52	20
Florence	67	34	33
Greenville	81	63	18
Richland (S. C. State Hospital)	550	328	222
Spartanburg	69	44	25
Total	903	549	354

Table 24—Selected Data on the Operation of Tuberculosis Hospitals in South Carolina, 1945

Number of Hospitals	6
*Number of Beds (normal)	903
Patients Admitted	881
Patients Treated	1,583
Patient Days of Service Rendered	252,563
Deaths in TB Hospitals	248
Average Length of Stay	159.5
Per Diem Cost	2.88
Per Cent Occupancy	76.63
Average Daily Census	692

It is recommended that any new facilities established for tuberculosis should be adjacent to and in relation with general hospitals so that technical facilities and medical personnel may be available for surgical procedure and other special treatment required by these patients. It is doubtful that maximum efficiency of operation and quality of care can be achieved in tuberculosis hospitals smaller than 100 beds or larger than 500 beds.

* Normal bed capacity exceeds bed complement.

Chapter VII

PROFESSIONAL MEDICAL PERSONNEL

Physicians

No attempt has been made to estimate the number of physicians, nurses, technicians and other personnel that would be required to operate the hospitals recommended. It is believed that an integrated system of hospitals adequately distributed over the State, by bringing modern facilities into the rural areas, would attract physicians, nurses and technical personnel to the areas where the greatest need exists.

In any program designed for improving the health of the people, physicians in adequate numbers are essential in the promotion of such a program. In April, 1946, there were 1079 [1] active practicing physicians in the State. An accepted standard of ade-

[1] Special tabulation by The American Medical Association.

FIGURE XII—NUMBER OF PHYSICIANS PER 10,000 POPULATION BY COUNTIES, SOUTH CAROLINA, 1946

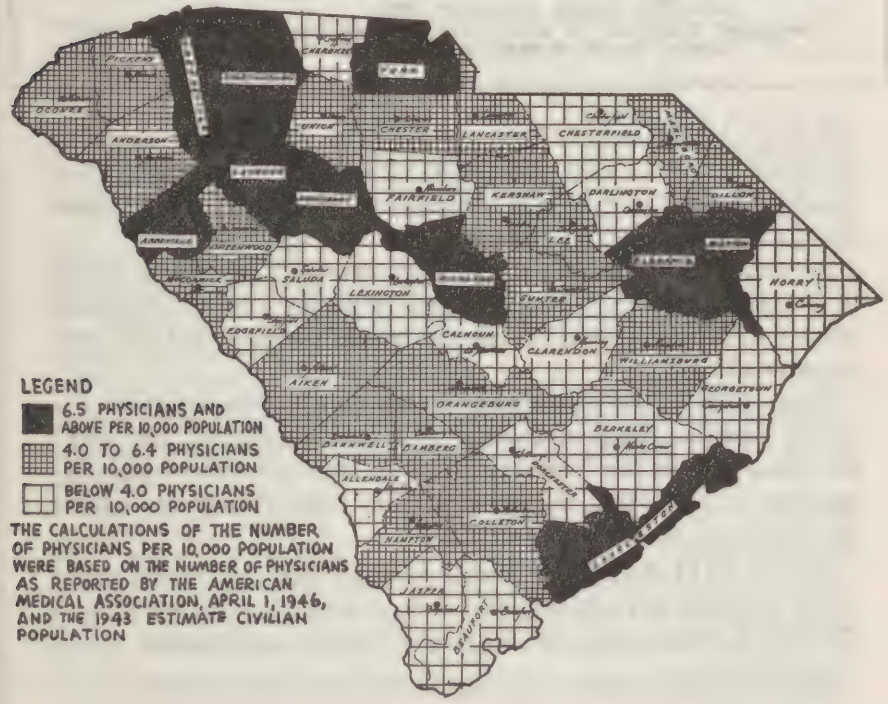
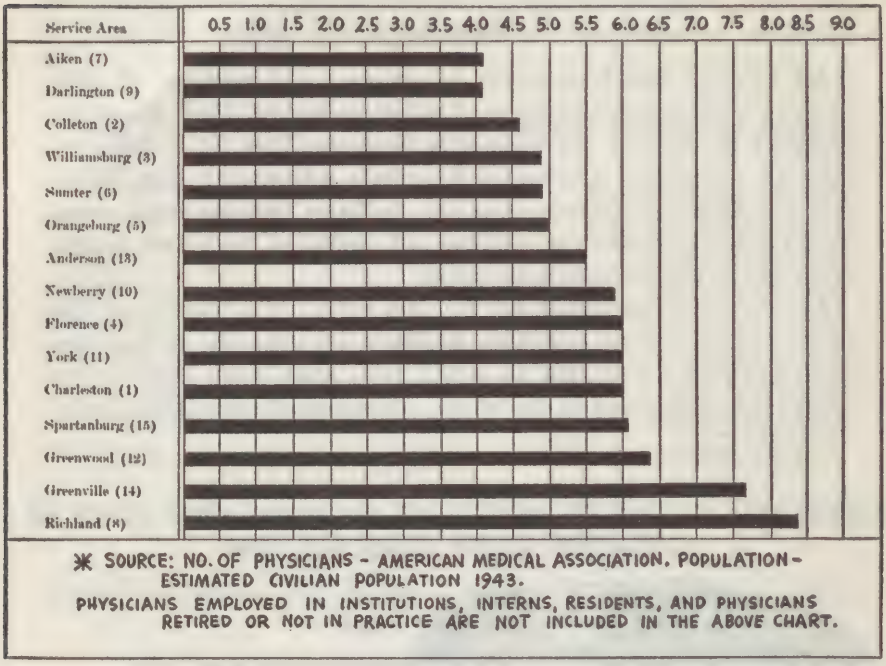


FIGURE XIII—NUMBER OF PHYSICIANS PER 10,000 POPULATION BY HOSPITAL SERVICE AREAS, SOUTH CAROLINA, 1946



quacy of physicians is at least one physician per 1000 population. In South Carolina there are 1659 persons per active physician. In order to reach the accepted standard the number of physicians should be 1789, or an increase of 710 physicians.

Figure XII shows that the greatest need for physicians exists in the rural areas. To improve this situation young physicians upon graduation should be encouraged to practice in their own communities.

From 1920 to 1944, 911 physicians have graduated from the South Carolina Medical College. Of this number 67 per cent[2] are practicing in the State. It might be well to consider the possibilities of increasing the enrollment of medical students within the very near future.

Figure XIII shows the number of physicians per 10,000 population in each district hospital service area. The Richland and Greenville areas have the highest physician-population ratio;

[2] Special tabulation prepared by the South Carolina Medical College.

whereas the Aiken and Darlington areas have the lowest ratios. There is a much greater variation in the physician-population ratio among the counties (see Appendix Table IX). The State as a whole has 6 physicians per 10,000 population. The accepted standard calls for 10 physicians per 10,000 population.

Nurses

Nursing Services

The responsibility for the care of the patient in the hospital is the direct responsibility of the nursing department. In number of personnel employed this department is the largest and the most complex of the several divisions of the hospital. It is responsible for furnishing sufficient and competent nursing care for all patients according to standards agreed upon by the medical and nursing staffs, the administration, and governing board.

Efficient, skillful, understanding and sympathetic persons must make up the nursing department. Personality, education, and social background of nurses are important as the nursing service grows more and more complex and demanding. A well qualified and capable director of nurses should head this department and it should be well organized and directed.

The head of the nursing department is responsible to the administrator of the hospital, as are other heads of divisions. She is responsible to him for the effective operation of the department.

The nursing department in all hospitals is responsible to the medical staff for the care of the patient as ordered by the physician. Regulations developed by the department and approved by the medical staff and administrator should govern the procedure followed in the performance of nursing duties.

Supervisors and staff nurses should continue their studies and some provision should be made to further their education. Standards of nursing service should be adopted and maintained by all hospitals.

The survey revealed a critical shortage of graduate nurses in the State of South Carolina. In 1941 the South Carolina Nurses Association conducted a survey which disclosed that South Carolina had 1 nurse for 982 population, whereas the national average based upon 1940 population was 1 nurse for 357 population. Table 25 shows the number of graduate nurses who held membership in the American Nurses Association in South Carolina in

1945 and the distribution of these nurses among various types of service.

Table 25—Distribution of Graduate Nurses Holding Membership in The American Nurses Association Among Various Types of Services in South Carolina, 1945*

Type of Service	Number	Per Cent
Private Duty	615	39.3
Institutional, Including Nursing Education	531	33.9
Public Health	114	7.3
Industrial	20	1.3
Office	81	5.2
Military	80	5.1
Other Fields	24	1.5
Inactive	47	3.0
Unknown and not Classified	53	3.4
Total	1565	100.0

* Special tabulation by American Nurses Association.

Training of Nurses

It is necessary to have a training program for educating enough properly qualified nurses to meet the demands of the hospitals and the public. A training program must always endeavor to elevate rather than lower standards of professional excellence. Hospitals conducting organized schools of nursing should have as a basis a sound educational program. College or university affiliation would be preferable, but since this cannot be readily achieved, it would be much better for nursing schools to be conducted in the larger hospitals which have adequate financial resources. Since hospitals are large users of the product of the school, the hospitals are concerned with the quality of services which the nurses are able to render, and have a right to expect each professional nurse to step into any phase of nursing without any doubt in her mind or that of her employer as to her qualifications and ability.

The properly trained nurse should be skilled in surgery, operating room technique, surgical and medical nursing, pediatric nursing, diet theraphy, laboratory work, emergency room duties, and orthopedics, psychiatry, public health work, premature care,

obstetrics, oxygen therapy, and many other specialties. Hospitals have a right to expect nurses to be acquainted with the rapidly changing technique demanded by advancing medical science. Hospitals may expect nurses to give care which considers the preventive as well as the curative phase of nursing and the physical and mental aspects of a patient's condition.

Hospitals not having adequate clinical experiences to offer should not attempt to conduct a training school for nurses. Some hospitals have tried to justify their schools of nursing through affiliation with other hospitals, but lacking in the basic experiences, the system has not been effective to produce the kind of graduate nurses all hospitals want and need.

Students in schools of nursing should be required to pay part of the cost of their education. This should relieve student nurses from some of their onerous service duties and give them more time to devote to their studies. At the same time, hospitals should elevate their standards and have something worthwhile to offer girls who are interested in nursing as a career and who wish further study and preparation in their field. The trend in nurse education is moving gradually toward a higher and higher standard of education which requires more of the students' time, broader clinical experience, better instructions and closer supervision. Clinical experience should include psychiatry, tuberculosis and public health nursing.

A new experiment in nurse education is under way, and before long the nation as a whole may be educating two types of nurses, one non-professional and the other professional. The non-professional training will consist of a rather short course of from nine to twelve months, which will prepare the trainee for nursing the convalescent, the chronic case and the less acutely ill. Non-professional nursing will be supervised by the professional nurse, whose education will be strengthened and extended for filling positions of nurse educator, teacher or supervisor. If this experiment proves successful and popular, the smaller schools of nursing may find it more profitable and expedient to give up their courses for professional nurses, and adopt the practical nurse program.

States with large negro population should consider the best means of educating the negro nurse.

In a State integrated hospital system, the base hospital should be provided with the finances and the clinical facilities to develop into a large center of nurse education. There should be graduate courses for the training of head nurses and supervisors. Most hospitals are in need of nurses with better preparation for hospital responsibilities. The hospitals and the State should look to the base hospital for leadership in nurse education.

In view of the fact that a substantial increase in hospital facilities in South Carolina would encounter a bottle-neck in the supply of trained nursing personnel, every effort should be made to attract people into the nursing profession. It is quite possible that there is a considerable number of women who would like to take nurses' training, but who for one reason or another cannot enter as full-time students nurses. It is suggested, therefore, that a few hospitals in the State investigate the possibility of enrolling part-time students who will take a full course, but who will require a longer period of time to complete their training. Some of the outstanding members of other professions received their education on a part-time basis, and it may well be that the same would be the case in the nursing profession.

Dentists

According to a list of dentists published by the Division of Dental Health, State Board of Health of South Carolina (Appendix Table X), there were 323 active practicing dentists in the State as of August, 1946. The accepted standard is one dentist per 2000 population, whereas South Carolina has only 0.36 dentists per 2000 population, or one dentist for 5541 persons. In order to reach the accepted standard of adequacy 572 more dentists are needed in the State.

Chapter VIII

SUMMARY

The inventory revealed 79 hospitals in South Carolina. Those operated by the Federal Government, State prisons and colleges were not included. Of this number 61 were classified as general hospitals, 8 allied special, 3 nervous and mental, 6 tuberculosis, and one as domiciliary care. The one classified as domiciliary care was deleted in the tabulation of statistics.

General hospitals constitute more than three-quarters of the hospitals in South Carolina, but contain only 39.9 per cent of the total beds. Allied and special hospitals accounted for 10.3 per cent of the hospitals, but contain only 2.9 per cent of the total beds of the State. Three and eight-tenths per cent of South Carolina's hospitals were operated for nervous and mental patients; however, they accounted for slightly more than half of the total hospital beds for the State. Tuberculosis hospitals accounted for 7.7 per cent of the hospitals in the State, and 7 per cent of the total beds. No hospitals for the treatment of chronic and convalescent patients were disclosed in the survey.

The 15 district hospital service areas that were delineated in the State were sub-divided into 37 hospital communities. Each hospital community was classified according to the Federal Government classification, i. e., base, intermediate and rural.

A method was established for estimating general hospital requirements for a ten year period based on population trends, purchasing power, and vital statistics. According to the method used it is estimated that 8145 beds will be required in South Carolina in 1957 to meet the demand for hospitalization.

In organizing the plan for a system of hospitals adequate to meet the requirements of all of the people of South Carolina, and in making specific recommendations for the construction of additional facilities, it was necessary to omit hospitals that constituted fire hazards and small proprietary hospitals that were not suitable for expansion under Public Law 725. Of the 4484 general hospital beds in existence, 4119 were considered to be acceptable for purposes of the State hospital plan.

In making specific recommendations for counties and communities it was necessary to take a number of factors into consideration. Some of the factors considered were: the estimated demand for hospital services in 1957, the number of beds which

the Federal Government would help finance, travel distances which might affect the use of hospital facilities, the possibility of people in one district or community patronizing the hospital in an adjoining district or community, the amount of local funds available or potentially available for building purposes, and the necessity for retaining in the State pool a sufficient number of unallocated beds to provide for future flexibility to meet unforeseen conditions.

The recommended integrated general hospital plan provides for 56 general hospitals and 14 community clinics with a total normal bed capacity of 6975. This would require 2856 additional beds to the 4119 existing acceptable beds. The bed-population ratio of the 6975 recommended beds would be 3.9 beds per 1000 population (1943 civilian population). At an average occupancy rate of 70 per cent these hospitals would provide a total of 1,782,-113 patient days of service per year, or approximately one day of service per capita per year. This is an increase of 56 per cent over the number of patient days of service rendered by general hospitals in South Carolina in 1945. Even after this plan has been put into effect South Carolina will still rank below many other states in the amount of hospital facilities per capita.

At the time this report is being written there is available no clear and definite ruling on the question of whether and to what extent hospital beds allowed in community under Public Law 725, but not allocated to that community by the State construction agency, will be allowed to revert to the State pool for allocation to any community in which they appear to be needed. If all such beds go into the State pool, these recommendations will result in a pool of 1,290 beds. On the other hand, if all such beds must be "earmarked" for the particular hospital communities in which they would be placed if beds were allocated strictly according to the Federal formula, the State pool will amount to 719 beds, with 571 additional beds "earmarked" for certain specific counties or communities.

The integrated hospital plan for general hospitals presented in this report is a workable systematic arrangement of hospitals. It embraces a framework composed of a base hospital, district hospitals, community hospitals, and several community clinics.

Generally the rural areas have the least number of acceptable and recommended beds per 1000 population. On the other hand, the percentages of recommended increase in acceptable

beds are higher for the rural area than for the urban areas. There are 2.3 existing acceptable beds per 1000 population in South Carolina. It is recommended that this ratio be increased to 3.9 beds per 1000 population.

Travel distance is the major determining factor in the selection of hospitals for the acutely ill. At the present in some rural areas, it is necessary to travel more than thirty miles to reach hospital facilities. The geographical distribution of general hospitals has been improved considerably in the integrated hospital plan.

Of the eight existing allied special hospitals in the State, only four are considered to be acceptable. If the orthopedic and venereal disease hospitals are expanded, they should be expanded on a statewide basis and the beds should be allotted from the State pool. Other types of allied hospitals are not recommended because these patients can be treated in a general hospital. No separate facilities are recommended for the care of chronic and convalescent patients at this time, but the general hospital should make provision for the care of this type of patient.

There are three hospitals for nervous and mental patients in South Carolina. The 1945 statistics disclosed a normal bed capacity of 4038 in all of these institutions. On the basis of the minimum standard of five beds per 1000 population, South Carolina should have a total of 8948 beds.

There are six hospitals in South Carolina for tubercular patients. These hospitals have a total bed capacity of 903 beds, 549 beds for white patients and 354 for negroes. On the basis of a minimum requirement of 2½ times the average annual number of deaths from tuberculosis in the State over the four year period from 1940 to 1944, inclusive, the State should have 1875 beds for tuberculosis, and most of these should be for the treatment of negro patients.

In April, 1946, there were 1079 active practicing physicians in the State. An accepted standard of adequacy of physicians is at least one physician per 1000 population. In South Carolina there are 1659 persons per active physician. In order to reach the accepted standard the number of physicians should be 1789, or an increase of 710 physicians.

The survey revealed a critical shortage of graduate nurses in the State. In 1941 the South Carolina Nurses Association con-

ducted a survey which disclosed that South Carolina had one nurse for 982 persons, whereas the national average based upon 1940 population was one nurse for 357 persons.

Schools of nursing should be strengthened, and unless hospitals can offer clinical experience to meet acceptable standards, they should not operate as schools of nursing. The standard for the training of nurses in the State should be revised and elevated to the point where all hospitals conducting schools of nursing would produce well qualified professional nurses.

There were 323 active practicing dentists in the State as of August, 1946. The accepted standard is one dentist per 2000 population, whereas South Carolina has only 0.36 dentists per 2000 population, or one dentist for 5541 persons. In order to reach the accepted standard of adequacy 572 more dentists are needed in the State.

APPENDIX A

SUMMARY OF THE HOSPITAL SURVEY AND CONSTITUTION ACT

(An interpretation of the Act and of regulations pursuant thereto, by the Hospital Facilities Division, U. S. Public Health Service, Federal Security Agency, Washington, D. C.)

Purpose: The purpose of this Act is to provide Federal assistance to the States to the end that "the necessary physical facilities for furnishing adequate hospital, clinic, and similar services to all their people" will be attained. Federal grants-in-aid are authorized to assist the States:

1. To determine their hospital and public health center needs through Statewide surveys.

2. To develop State-wide programs for construction of facilities needed to supplement existing facilities.

3. To construct facilities which are thus determined to be necessary, and which are in conformity with the construction program constituting the approved State-wide plan.

"Hospital" Broadly Defined: The kinds of facilities which may be constructed under this program include:

1. Hospitals—general, tuberculosis, mental, chronic disease, and other types, except those furnishing primarily domiciliary care. These include public and other non-profit hospitals. The latter term means any hospital owned and operated by a corporation or association, no part of the net earnings of which inures, or may lawfully inure, to the benefit of any private shareholder or individual.

2. Public health centers—which are defined to mean a publicly owned facility for the provision of public health services, the scope of which would be a matter of State law.

3. Related facilities—which in the case of a hospital, could include laboratories, out-patient departments, nurses' homes and teaching facilities, and central service facilities operated in connection with the hospital. In the case of a public health center, related facilities would include laboratories, clinics, and administrative offices operated in connection with the center.

"Construction" Defined: As used in this Act, the term "construction" is also broadly defined to include:

1. Construction of new buildings.

2. Expansion, remodeling, and alteration of existing buildings.

3. Initial equipment of any such new or existing buildings, including architects' fees.

Specifically excluded are the cost of off-site improvements and, except with respect to public health centers, the cost of the acquisition of land. The "cost of construction" means the amount found necessary by the Surgeon General for the construction of a project.

Administration: The Federal administration of this program is the responsibility of the Surgeon General of the Public Health Service in the Federal Security Agency. He has the advice and assistance of a Federal Hospital Council with which he is required to consult in administering this Act. The Council consists of the Surgeon General as chairman, and of 8 members appointed by the Federal Security Administrator. Of the 8 appointed members, 4 are persons who are outstanding in the fields pertaining to hospital and health activities, and 3 of these 4 are authorities in matters relating to the operation of hospitals. The other 4 members represent the consumers of hospital service and are familiar with the need for hospital services in urban or rural areas.

The Council has the responsibility of approving the Surgeon General's general regulations governing State hospital construction plans. The Council would also be the body to which an appeal could be taken by States whose State plans are disapproved by the Surgeon General. The decision of the Council will be final in such appeals. The Council's other functions are advisory.

SURVEYS AND PLANNING

Appropriation: The Act authorizes the appropriation of $3,000,000 in order to assist the States to survey their needs for hospital and related facilities and to develop programs for the construction of additional hospitals, public health centers, and related facilities.

State Applications: In order to qualify for a Federal grant for such surveying and planning purposes, a State must have

an application approved by the Surgeon General. He is required to approve any application which complies with these conditions:

1. It must designate a single State agency to conduct the survey and planning, and make such reports as the Surgeon General may require.

2. It must provide for a State advisory council which must include "representatives of non-government groups, and of state agencies, concerned with the operation, construction, or utilization of hospitals, including representatives of the consumers of hospital services."

3. It must provide for making an inventory and survey of existing and needed hospital and related facilities and for developing a construction program.

Allotments and Payments to States: The funds which are appropriated by Congress for such surveys and planning will be alloted among the States on a population basis. No State, however, may be alloted less than $10,000, *within their allotments the States which have approved applications will be entitled to receive* 33-1/3 *per cent of their expenditures in carrying out these survey and planning functions.*

CONSTRUCTION OF HOSPITALS AND RELATED FACILITIES

Appropriation: The Act authorizes the appropriation of $75,000,000 for each of the 5 fiscal years beginning July 1st, 1946, in order to assist the States in the construction of needed public and other non-profit hospitals, public health centers, and related facilities. Funds to pay 33-1/3 per cent of the cost are available from the Federal allotment to the State. . . .

State Plans: In order to obtain Federal funds for the construction of hospitals under this bill, a State is required to formulate and have approved by the Surgeon General a State plan. Such State plan must:

1. Designate a single State agency to administer or supervise the administration of the plan.

2. Demonstrate that the State agency so designated will have the necessary authority to carry out the plan.

3. Provide for a State advisory council to consult with the State agency in carrying out the plan.

4. Set forth a hospital construction program based on a Statewide inventory of existing hospitals and survey of need which conforms to the regulations promulgated by the Surgeon General.

5. Set forth the relative need for the individual projects included in the plan, and provide for their construction (insofar as financial resources available for construction and for maintenance and operation permit) in the order of relative needed determined in accordance with regulations prescribed by the Surgeon General.

6. Provide such methods of administration of the State plan, including establishment and maintenance of personnel standards on a merit basis, as the Surgeon General by regulations requires, except that he may exercise no authority with respect to the selection, tenure of office, or compensation of persons employed by the State agency.

7. Provide minimum standards for the maintenance and operation of hospitals which receive Federal aid under the plan. This would be a matter entirely for determination by the respective States. Each State must, prior to July 1, 1948, enact legislation establishing minimum standards for the maintenance and operation of hospitals which shall have received aid under this Act. Any State failing to enact such legislation will be deprived of further allotments under this bill.

8. Provide for affording to applicants for a construction project an opportunity for hearing before the State agency.

9. Submit reports and information required by the Surgeon General.

10. Provide for the review by the State agency of the construction program contained in the plan and submit modification which it considers necessary to the Surgeon General.

The Surgeon General is required to approve any State plan which complies with the above conditions. In any case in which the Surgeon General disapproves a plan, the Federal Hospital Council must afford the State agency an opportunity for a hearing. If the Council determines that the State plan complies with such requirements, the Surgeon General must approve the plan.

APPENDIX B—TABLES

APPENDIX TABLE I.—GENERAL HOSPITALS IN SOUTH CAROLINA, 1945

County	City	Name of Hospital	Type of Ownership	Normal Bed Capacity
Abbeville	Abbeville	Abbeville County Memorial	Gov.	38
Aiken	Aiken	Aiken County	Gov.	63
Anderson	Anderson	Anderson County Hosp. Assn.	NPA	152
	Anderson	Saint M. ry's	NPA	30
	Pelzer	Pelzer Clinic	Prop.	6
Beaufort	Beaufort	Beaufort County	Gov.	42
Berkeley	Moncks Corner	Berkeley County	Gov.	54
Charleston	Charleston	Baker Memorial Sanatorium	NPA	63
	Charleston	Roper Hospital	NPA	475
	Charleston	St. Francis Xavier Infirmary	NPA	111
	Charleston	Hosp. & Training School For Nurses	NPA	24
Cherokee	Gaffney	Cherokee County	Gov.	48
Chester	Chester	Pryor Hospital	NPA	50
Colleton	Walterboro	Charles EaDorn	Gov.	34
Darlington	Hartsville	Byerly Hospital	NPA	74
Dillon	Dillon	Saint Eugene	NPA	41
Dorchester	Summerville	Dorchester County	Gov.	50
Fairfield	Winnsboro	McCants Hospital	Prop.	10
Florence	Florence	The McLeod Infirmary	NPA	195
	Florence	Saunders Memorial	Prop.	72
	Lake City	The Whitehead Infirmary	Prop.	13
Greenville	Greenville	Greenville General Hosp., Inc.	Gov.	294
	Greenville	Saint Francis	NPA	115
	Greenville	Working Benevolent Society	NPA	22
	Travelers Rest	Coleman Hospital	Prop.	22
	Travelers Rest	Gaston Hospital	Prop.	20
	Slater	Wood Memorial Clinic	Prop.	4
Greenwood	Greenwood	Greenwood Hospital Assn.	NPA	85
	Greenwood	Brewer Hospital	NPA	28
Horry	Conway	Conway Hospital, Inc.	NPA	65
Jasper	Ridgeland	Ridgeland Hospital	NPA	38
Kershaw	Camden	Camden Hospital	NPA	66
Lancaster	Lancaster	Marion Simms Memorial Hosp.	NPA	55
Laurens	Laurens	Laurens County	Gov.	59
	Clinton	Hayes Hospital	Prop.	17
Marion	Mullins	Mullins Hospital	Gov.	63
	Mullins	James L. Martin Hospital	Prop.	25
Marlboro	Bennettsville	Marlboro County General	NPA	74
Newberry	Newberry	Newberry County	NPA	26
	Newberry	Peoples Hospital	NPA	17
Oconee	Seneca	Oconee County	NPA	35
Orangeburg	Orangeburg	Tri-County	Gov.	112
Pickens	Six Mile	S. C. Baptist	NPA	25
Richland	Columbia	Columbia Hosp. of Richland Co.	Gov.	445
	Columbia	Good Samaritan Waverly	NPA	70
	Columbia	Providence	NPA	96
	Columbia	S. C. Baptist	NPA	109
Spartanburg	Spartanburg	Spartanburg General	Gov.	297
	Spartanburg	Mary Black Memorial	NPA	52
	Woodruff	Workman Memorial Hospital	Prop.	13
Sumter	Sumter	Tuomey Hospital	NPA	150
Union	Union	Wallace Thompson Hospital	Gov.	26
	Union	Union Community	NPA	18
Williamsburg	Kingstree	Kelly Memorial Hospital	NPA	55
	Hemingway	Johnson Memorial Hospital	Prop.	51
York	Rock Hill	York County	Gov.	79
	Rock Hill	St. Phillips	NPA	50
	Rock Hill	Dunlap Hospital	Prop.	11
	York—	Divine Saviour Hospital	NPA	26

The following thirteen counties have no hospitals:

Allendale, Bamberg, Barnwell, Calhoun, Chesterfield, Clarendon, Edgefield, Georgetown Hampton, Lee, Lexington, McCormick, Saluda.

The Florence Williams Hospital at Georgetown and the Jones Hospital located at Batesburg were not included in this table because of their limited amount of service rendered.

APPENDIX TABLE II.—SPECIAL HOSPITALS, SOUTH CAROLINA, 1945

County	City	Name of Hospital	Type of Ownership	Type of Serv.	Normal Bed Capacity
		Allied Special Hospitals			
Florence	Florence	S. C. Public Health Hosp.	Gov.	VD	150
	Florence	S. C. Home for Crippled Children	Gov.	Orth.	45
Greenville	Greenville	Dr. Jervey's Private Hospital	Prop.	EEN&T—	9
	Greenville	Shriners' Hosp. for Crippled Children	NPA	Orth.	60
	Greenville	Maternity Shelter Hosp., Inc.	NPA	Mat.	31
Orangeburg	Orangeburg	Urological Institute	Gov.	Urology	10
Richland	Columbia	The Moore Clinic	Prop.	Orth.	16
	Columbia	Deloach Sanatorium	Prop.	Alcoholic	18
		Tuberculosis Hospitals			
Charleston	Charleston	Pinehaven Sanatorium	Gov.	TB	64
Florence	Florence	Florence-Darlington Tuberculosis Sanatorium	Gov.	TB	67
Greenville	Greenville	Greenville Tuberculosis Sanatorium	Gov.	TB	81
Richland	Columbia	Ridgewood Tuberculosis Camp	NPA	TB	72
	State Park	S. C. Sanatorium	Gov.	TB	550
Spartanburg	Spartanburg	Spartanburg Tuberculosis Hosp.	Gov.	TB	69
		Nervous & Mental Institutions			
Laurens	Clinton	State Training School	Gov.	N&M	686
Richland	Columbia	S. C. State Hospital	Gov.	N&M	3312
	Columbia	Waverly Sanatorium, Inc.	Prop.	N&M	30

APPENDIX TABLE III-A.—GENERAL HOSPITALS NOT INCLUDED IN STATE PLAN

Name of Hospital	Location	Type of Construction	Fire Resistive	Year Built	Ownership	Bed Capacity
Pelzer Clinic	Pelzer	Frame	No	1926	Corporation	6
Hospital Training & Nurses School	Charleston	Frame	No	1808	Non-Profit	24
Charles EsDorn	Walterboro	Frame & brick	No	1910	County	34
McCants Hospital	Winnsboro	Stucco & brick	No	1943	Proprietary	10
Florence Williams Hospital	Georgetown	Frame	No	1894	Proprietary	15
Working Benevolent Society	Greenville	Frame	No	1913	Proprietary	22
Coleman Hospital	Travelers Rest	Brick & stone	No	1940	Proprietary	22
Wood Memorial Clinic	Slater	Brick & stone	No	1941	Proprietary	4
Gaston Hospital	Travelers Rest	Brick & stone	No	1936	Proprietary	20
Hayes Hospital	Clinton	Brick & stone	No	1917	Proprietary	17
Jones Hospital	Batesburg	Frame	No	1911	Proprietary	9
James L. Martin Hospital	Mullins	Stucco	No	1937	Proprietary	25
Peoples Hospital	Newberry	Frame	No	1900	Non-Profit	17
Good Samaritan Waverly	Columbia	Frame	No	1910	Non-Profit	70
Workman Memorial Hospital	Woodruff	Frame	No	1923	Proprietary	13
Union Community Hospital	Union	Brick veneer	No	1932	Non-Profit	18
Whitehead Infirmary	Lake City	Stucco & brick	No	1938	Proprietary	13
Dunlap Hospital	Rock Hill	Brick	Yes	1936	Proprietary	11
S. C. Baptist Hospital	Six Mile	Stucco & tile	No	1930	Non-Profit	25

APPENDIX TABLE III-B.—ALLIED SPECIAL HOSPITALS NOT INCLUDED IN STATE PLAN

Dr. Jervey's Private Hospital	Greenville	Brick & frame	No	1923	Proprietary	9
Maternity Shelter, Inc.	Greenville	Frame	No	1925	Non-Profit	31
Moore Clinic	Columbia	Frame	No	1847	Proprietary	16
Deloach Sanatorium	Columbia	Frame	No	Undetermined	Proprietary	18

APPENDIX TABLE IV.—DENSITY OF POPULATION BY COUNTIES, SOUTH CAROLINA, 1943

COUNTY	*1943 Estimated Civilian Population	**Land Area in Square Miles	Population per Square Mile
Abbeville	18,376	509	36.1
Aiken	46,108	1,097	42.0
Allendale	11,115	418	26.6
Anderson	76,566	776	98.7
Bamberg	15,505	395	39.3
Barnwell	16,001	553	28.9
Beaufort	22,215	672	33.1
Berkeley	24,471	1,214	20.2
Calhoun	13,452	389	34.6
Charleston	161,819	945	171.2
Cherokee	28,820	394	73.1
Chester	27,305	585	46.7
Chesterfield	30,596	793	38.6
Clarendon	26,184	694	37.7
Colleton	24,652	1,048	23.5
Darlington	41,853	545	76.8
Dillon	26,410	407	64.9
Dorchester	20,676	569	36.3
Edgefield	15,446	481	32.1
Fairfield	20,606	699	29.5
Florence	64,809	805	80.5
Georgetown	25,697	813	31.6
Greenville	140,362	789	177.9
Greenwood	37,043	458	80.9
Hampton	15,672	562	27.9
Horry	48,230	1,152	41.9
Jasper	8,686	578	15.0
Kershaw	34,812	786	44.3
Lancaster	22,432	504	44.5
Laurens	36,446	713	51.1
Lee	18,363	409	44.9
Lexington	35,762	716	49.9
McCormick	7,997	403	19.8
Marion	27,503	480	57.3
Marlboro	29,071	482	60.3
Newberry	29,283	630	46.5
Oconee	30,959	670	46.2
Orangeburg	58,397	1,120	52.1
Pickens	33,948	501	67.8
Richland	117,175	748	156.7
Saluda	13,900	442	31.4
Spartanburg	121,475	830	146.4
Sumter	49,165	689	71.4
Union	24,735	515	48.0
Williamsburg	34,207	931	36.7
York	55,357	685	80.8
TOTAL	1,789,662	30,594	58.5

* 1943 Estimated Civilian Population of the United States, Bureau of The Census.

** 16th Census of the United States, 1940, Bureau of The Census.

APPENDIX TABLE V.—EFFECTIVE BUYING POWER, BY COUNTIES, SOUTH CAROLINA, 1945

COUNTY	1943 Estimated Civilian Pop.	*Net Income (Dollars in Thousands)	Income per Capita	Per Cent Income Per Capita of State Average
Abbeville	13,376	$9,335	$508.0	77.2
Aiken	46,108	25,521	553.5	84.1
Allendale	11,115	5,005	450.3	68.4
Anderson	76,566	53,190	694.7	105.6
Bamberg	15,505	9,375	604.6	91.9
Barnwell	16,001	9,950	621.8	94.5
Beaufort	22,215	10,333	465.1	70.7
Berkeley	24,471	6,953	284.1	43.2
Calhoun	13,452	6,701	498.1	75.7
Charleston	161,819	128,492	794.0	120.7
Cherokee	28,820	14,754	511.9	77.8
Chester	27,305	16,983	622.0	94.5
Chesterfield	30,596	16,085	525.7	79.9
Clarendon	26,184	10,404	397.3	60.4
Colleton	24,652	11,100	450.3	68.4
Darlington	41,853	25,178	601.6	91.4
Dillon	26,410	12,665	479.6	72.9
Dorchester	20,676	8,618	416.8	63.3
Edgefield	15,446	7,366	476.9	72.5
Fairfield	20,606	9,697	470.6	71.5
Florence	64,809	50,507	779.3	118.4
Georgetown	25,697	14,733	573.3	87.1
Greenville	140,362	135,956	968.6	147.2
Greenwood	37,043	31,908	861.4	130.9
Hampton	15,672	7,467	476.5	72.4
Horry	48,230	27,156	563.1	85.6
Jasper	8,686	2,816	324.2	49.3
Kershaw	34,812	14,542	417.7	63.5
Lancaster	22,432	15,097	673.0	102.3
Laurens	36,446	22,948	629.6—	95.7
Lee	18,363	9,859	536.9	81.6
Lexington	35,762	16,327	456.5	69.4
McCormick	7,997	3,098	387.4	58.9
Marion	27,503	15,813	575.0	87.4
Marlboro	29,071	16,681	573.8	87.2
Newberry	29,283	17,518	598.2	90.9
Oconee	30,959	14,824	478.8	72.8
Orangeburg	58,397	31,888	546.1	83.0
Pickens	33,948	17,912	527.6	80.2
Richland	117,175	95,835	817.9	124.3
Saluda	13,900	6,236	448.6	68.2
Spartanburg	121,475	108,771	895.4	136.1
Sumter	49,165	29,607	602.2	91.5
Union	24,735	19,244	778.0	118.2
Williamsburg	34,207	13,098	382.9	58.2
York	55,357	40,103	724.4	110.1
TOTAL	1,789,662	$1,177,649	$658.0	100.0

* "Copyright 1946, Sales Management Survey of Buying Power. Further reproduction not licensed."

APPENDIX TABLE VI.—POPULATION TRENDS BY COUNTIES, AND SERVICE AREAS, SOUTH CAROLINA

COUNTIES BY SERVICE AREAS	POPULATION				Estimated
	1920	1930	1940	1943*	1957
1. Charleston	108,450	101,050	121,105	161,819	179.976
Berkeley	22,558	22,236	27,128	24,471	27,251
Dorchester	19,459	18,956	19,928	20,676	23,025
Area Total	150,467	142,242	168,161	206,966	230,252
2. Colleton	29,897	25,821	26,268	24,652	27,041
Hampton	19,550	17,243	17,465	15,672	17,189
Jasper	9,863	9,988	11,011	8,686	9,524
Beaufort	22,269	21,815	22,037	22,215	24,309
Area Total	81,584	74,867	76,781	71,225	78,063
3. Georgetown	21,716	21,738	26,352	25,697	40,653
Williamsburg	38,539	34,914	41,011	34,207	30,543
Area Total	60,255	56,652	67,363	59,904	71,196
4. Florence	50,406	61,027	70.582	64,809	84,309
Dillon	25,278	25,733	29,625	26,410	34,349
Maron	23,721	27,221	30,107	27,503	35,760
Horry	32,077	39,376	51,951	48,230	62,706
Area Total	131,482	153,357	182,265	166,952	217,124
5. Orangeburg	64,907	63,864	63,707	58,397	60,568
Calhoun	18,384	16,707	16,229	13,452	14,002
Bamberg	20,962	19,410	18,643	15,505	16,080
Barnwell	23,081	21,221	20,138	16,001	16,591
Allendale	16,098	13,294	13,040	11,115	11,520
Area Total	143,432	134,496	131,757	114,470	118,761
6. Sumter	43,040	45,902	52,463	49,165	55,457
Lee	26,827	24,096	24,908	18,363	20,745
Clarendon	34,878	30,036	31,500	26,184	29,531
Area Total	104,745	100,034	108,871	93,712	105,733
7. Aiken	45,574	47,403	49,916	46,108	49,962
Edgefield	23,928	19,326	17,894	15,446	16,689
Area Total	69,502	66,729	67,810	61,554	66,651
8. Richland	78,122	87,667	104,843	117,175	137,275
Lexington	35,676	36,494	35,994	35,762	41,934
Fairfield	27,159	23,287	24,187	20,606	24,116
Kershaw	29,398	32,070	32,913	34,812	40,763
Area Total	170,355	179,518	197,937	208,355	244,088
9. Darlington	39,126	41,427	45,198	41,853	49,142
Marlboro	33,180	31,634	33,281	29,071	34,128
Chesterfield	31,969	34,334	35,963	30,596	35,891
Area Total	104,275	107,395	114,442	101,520	119,161
10. Newberry	35,552	34,681	33,577	29,283	29,724
Saluda	22,088	18,148	17,192	13,900	14,104
Area Total	57,640	52,829	50,769	43,183	43,828
11. York	50,536	53,148	58,663	55,357	66,113
Chester	33,389	31,803	32,579	27,305	32,586
Lancaster	28,628	27,980	33,542	22,432	26,728
Area Total	112,553	113,201	124,784	105,094	125,427
12. Greenwood	35,791	36,078	40,083	37,043	38,898
Abbeville	27,139	23,323	22,931	18,376	19,342
McCormick	16,444	11,471	10,367	7,997	8,411
Area Total	79,374	70,872	73,381	63,416	66,651
13. Anderson	76,349	80,949	88,712	76,566	95,390
Oconee	30,117	33,368	36,512	30,959	42,223
Pickens	28,329	33,709	37,111	33,948	38,610
Area Total	134,795	148,026	162,335	141,473	176,223
14. Greenville	88,498	117,009	136,580	140,362	179,635
Laurens	42,560	42,094	44,185	36,446	46,577
Area Total	131,058	159,103	180,765	176,808	226,212
15. Spartanburg	94,265	116,323	127,733	121,475	150,749
Cherokee	27,570	32,201	33,290	28,820	35,739
Union	30,372	30,920	31,360	24,735	30,636
Area Total	152,207	179,444	192,383	175,030	217,124
STATE TOTAL	1,683,724	1,738,765	1,899,804	1,789,662	2,106,500

* Estimated Civilian Population, 1943, by the Bureau of Census, Dept. of Commerce.

APPENDIX TABLE VII.—ACCEPTABLE AND RECOMMENDED GENERAL HOSPITAL BEDS PER 1,000 POPULATION—BY HOSPITAL COMMUNITIES AND DISTRICT HOSPITAL SERVICE AREAS, SOUTH CAROLINA

(Based on 1943 Estimated Civilian Population)

Area No.	COUNTIES BY HOSPITAL COMMUNITIES AND SERVICE AREAS	ACCEPTABLE BEDS		RECOMMENDED BEDS	
		Number	Per 1,000 Population	Number	Per 1,000 Population
1.	Charleston	649	4.0	1,000	6.2
	Berkeley	54	2.2	60	2.5
	Dorchester	50	2.4	50	2.4
	Area Total	753	3.6	1,110	5.4
2.	Colleton, Hampton	0	0	150	3.7
	Jasper, Beaufort	80	2.6	80	2.6
	Area Total	80	1.1	230	3.2
3.	Georgetown	0	0	100	3.9
	Williamsburg	106	3.1	106	3.1
	Area Total	106	1.8	206	3.4
4.	Florence	267	4.1	350	5.4
	Dillon	41	1.6	65	2.5
	Marion	63	2.3	100	3.6
	Horry	65	1.3	150	3.1
	Area Total	436	2.6	665	4.0
5.	Orangeburg, Bamberg Calhoun	122	1.4	276	3.2
	Barnwell, Allendale	0	0	60	2.2
	Area Total	122	1.1	336	2.9
6.	Sumter, Lee	150	2.2	250	3.7
	Clarendon	0	0	50	1.9
	Area Total	150	1.6	300	3.2
7.	Aiken, Edgefield	63	1.0	181	2.9
	Area Total	63	1.0	181	2.9
8.	Richland	650	5.5	780	6.7
	Lexington	0	0	81	2.3
	Fairfield	0	0	50	2.4
	Kershaw	66	1.9	106	3.0
	Area Total	716	3.4	1,017	4.9
9.	Darlington	74	1.8	131	3.1
	Marlboro	74	2.5	100	3.4
	Chesterfield	0	0	56	1.8
	Area Total	148	1.5	287	2.8
10.	Newberry, Saluda	26	0.6	116	2.7
	Area Total	26	0.6	116	2.7
11.	York	155	2.8	230	4.2
	Chester	50	1.8	100	3.7
	Lancaster	55	2.5	55	2.5
	Area Total	260	2.5	385	3.7
12.	Greenwood	113	3.1	178	4.8
	Abbeville, McCormick	38	1.4	56	2.1
	Area Total	151	2.4	234	3.7
13.	Anderson	182	2.4	306	4.0
	Oconee	35	1.1	106	3.4
	Pickens	0	0	100	2.9
	Area Total	217	1.5	512	3.6
14.	Greenville	409	2.9	659	4.7
	Laurens	59	1.6	125	3.4
	Area Total	468	2.6	784	4.4
15.	Spartanburg	349	2.9	452	3.7
	Cherokee	48	1.7	100	3.5
	Union	26	1.1	60	2.4
	Area Total	423	2.4	612	3.5
	STATE TOTAL	4,119	2.3	6,975	3.9

APPENDIX TABLE VIII.—HOSPITALS CONDUCTING NURSING SCHOOLS, SOUTH CAROLINA, 1945

County	City	Name of Hospital	Normal Bed Capacity	No. of Students Enrolled
Anderson	Anderson	Anderson County Hospital Assn.	152	75
Charleston	Charleston	Roper Hospital	475	152
	Charleston	St. Francis Xavier Infirmary	111	64
Florence	Florence	The McLeod Infirmary	195	98
Greenville	Greenville	Greenville General, Inc.	294	123
Kershaw	Camden	Camden Hospital	66	33
Marion	Mullins	Mullins Hospital	63	16
Orangeburg	Orangeburg	Tri-County Hospital	112	42
Richland	Columbia	Columbia Hosp. of Richland Co.	445	166
	Columbia	S. C. Baptist Hospital	109	80
	Columbia	Good Samaritan Waverly Hosp.	70	56
	Columbia	S. C. State Hospital	3312	16
Spartanburg	Spartanburg	Spartanburg General	297	84
	Spartanburg	Mary Black Memorial Hospital	52	27
Sumter	Sumter	Toumey Hospital	150	45
York	Rock Hill	York County Hospital	79	56

APPENDIX TABLE IX.—NUMBER OF PHYSICIANS BY COUNTIES, SOUTH CAROLINA, 1946*

County	Estimated Civilian Population 1943	Specialists	General Practitioner	Total No. of Active Physicians	Physicians per 10,000 Pop.
Abbeville	18,376	4	10	14	7.6
Aiken	46,108	7	14	21	4.6
Allendale	11,115	1	3	4	3.6
Anderson	76,566	26	22	48	6.3
Bamberg	15,505	2	8	10	6.4
Barnwell	16,001	3	5	8	5.0
Beaufort	22,215	1	7	8	3.6
Berkeley	24,471	1	5	6	2.5
Calhoun	13,452	..	3	3	2.2
Charleston	161,819	59	52	111	6.9
Cherokee	28,820	6	4	10	3.5
Chester	27,305	5	11	16	5.9
Chesterfield	30,596	..	12	12	3.9
Clarendon	26,184	..	8	8	3.1
Colleton	24,652	7	8	15	6.1
Darlington	41,853	2	13	15	3.6
Dillon	26,410	3	9	12	4.5
Dorchester	20,676	1	7	8	3.9
Edgefield	15,446	1	3	4	2.6
Fairfield	20,606	2	4	6	2.9
Florence	64,809	21	34	55	8.5
Georgetown	25,697	2	8	10	3.9
Greenville	140,362	56	55	111	7.9
Greenwood	37,043	8	14	22	5.9
Hampton	15,672	2	7	9	5.7
Horry	48,230	9	6	15	3.1
Jasper	8,686	..	1	1	1.2
Kershaw	34,812	6	9	15	4.3
Lancaster	22,432	5	6	11	4.9
Laurens	36,446	11	14	25	6.9
Lee	18,363	..	8	8	4.4
Lexington	35,762	4	7	11	3.1
McCormick	7,997	..	4	4	5.0
Marion	27,503	8	11	19	6.9
Marlboro	29,071	4	11—	15	5.2
Newberry	29,283	5	15	20	6.8
Oconee	30,959	5	10	15—	4.8
Orangeburg	58,397	8	24	32	5.5
Pickens	33,948	5	10	15	4.4
Richland	117,175	79	62	141	12.0
Saluda	13,900	1	4	5	3.6
Spartanburg	121,475	35	49	84	6.9
Sumter	49,165	15	14	29	5.9
Union	24,735	3	10	13	5.3
Williamsburg	34,207	5	14	19	5.6
York	55,357	14	22	36	6.5
TOTAL	1,789,662	442	637	1079	6.0

* Special Tabulation of The American Medical Association, April 1, 1946.

Physicians employed in institutions, interns, residents and physicians retired or not in practice are not included in this table.

APPENDIX TABLE X.—NUMBER OF DENTISTS BY COUNTIES, SOUTH CAROLINA, 1946

COUNTY	*Number of Active Dentists	**Dentists per 10,000 Population
Abbeville	3	1.6
Aiken	5	1.1
Allendale	3	2.7
Anderson	13	1.7
Bamberg	3	1.9
Barnwell	4	2.5
Beaufort	2	0.9
Berkeley	1	0.4
Calhoun	1	0.7
Charleston	34	2.1
Cherokee	5	1.7
Chester	6	2.2
Chesterfield	5	1.6
Clarendon	1	0.4
Colleton	5	2.0
Darlington	6	1.4
Dillon	3	1.1
Dorchester	3	1.5
Edgefield	5	3.2
Fairfield	5	2.4
Florence	13	2.0
Georgetown	4	1.6
Greenville	31	2.2
Greenwood	10	2.7
Hampton	1	0.6
Horry	3	0.6
Jasper	1	1.2
Kershaw	3	0.9
Lancaster	6	2.7
Laurens	6	1.6
Lee	2	1.1
Lexington	3	0.8
McCormick	1	1.3
Marion	4	1.5
Marlboro	4	1.4
Newberry	5	1.7
Oconee	6	1.9
Orangeburg	9	1.5
Pickens	4	1.2
Richland	34	2.9
Saluda	2	1.4
Spartanburg	28	2.3
Sumter	10	2.0
Union	5	2.0
Williamsburg	5	1.5
York	10	1.8
TOTAL	323	1.8

* Division of Dental Health, State Board of Health of South Carolina.
Revised list of South Carolina Dentists August 1, 1946.

** Based on 1943 estimated civilian population.
Dentists retired and dentists in armed service were not included in this compilation.